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CENTRAL PROVINCES (INDIA)

COMPLETION REPORT OF RAMTEK RESERVOIR

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Central Provinces Administration

PUBLIC WORKS DEPARTMENT

FROM

MR. A. J. WADLEY,

JOINT SECRETARY TO THE HON'BLE THE CHIEF COMMISSIONER, CENTRAL PROVINCES,

Public Works Department (Irrigation),

TO

THE SECRETARY TO THE GOVERNMENT OF INDIA,

PUBLIC WORKS DEPARTMENT,

Simla.

Nagpur, the 7th February 1916.

SIR,

I am directed to submit the Completion Report of the Ramtek Reservoir in the Nagpur District of these Provinces.

2. The sanction of the Secretary of State to the original estimate, as a protective work, was communicated to this Administration in the Government of India's letter No. 171-I., dated the 6th February 1906. The revised estimate, for which a Completion Report is now submitted, was sanctioned by the Secretary of State in his despatch No. 7-P.W., dated the 24th February 1911, a copy of which was received with Government of India letter No. 432-I., dated the 27th March 1911.

3. The Ramtek project, which had been originally proposed in 1867-68, was laid before the Indian Irrigation Commission in 1901--03. The scheme was not, at that time, recommended by the local authorities, as the tract commanded consists largely of black soil under wheat cultivation, and they were in favour of the extension of irrigation in other tracts where the soils are lighter and where rice is the principal crop. The Commission, however, were favourably impressed with the scheme, and, although not recommending its construction in preference to other schemes, which in the opinion of the revenue authorities had greater protective value, still hoped that it might be possible to take it up at no distant date. It is evident, from the remarks of the Irrigation Commission in paragraph 330 of Part II of their report, that they considered that it should be taken up in order to test the value of irrigation in black soil tracts in the Central Provinces.

4. The history of the project will be found in the note by the Executive Engineer, Mr. Hallifax, pages 5 to 7 of the Completion Report, and it is unfortunate that, while the circumstances described therein have led to the construction of a much more expensive work than was contemplated by the Irrigation Commission, the results of the experiment, in which light the work must be regarded, have been most disappointing. The work as it stands proves to be badly proportioned from an engineering point of view, in that the tank does

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not fill, and the supply of water available is insufficient to irrigate fully the area commanded by the channels. The development of wheat irrigation, on which the financial prospects of the scheme were largely based, has not taken place, and, whatever development may be effected in the future, it is clear that, for the present, the project will have to rely for its revenue chiefly on rice, sugarcane and garden crop irrigation.

5. The financial prospects of the project and the opinions expressed by local officers have been briefly reviewed by the Financial Commissioner in his note, page 3 of the report, and the engineering aspect of the case has been considered by the late Chief Engineer, Mr. Tickell, in his note, pages 3 to 5 of the Completion Report.

6. Mr. Tickell has recommended the improvement of the project by the construction of a feeder channel from the Pench river. A storage work on that river has been investigated, in connection with the Lower Waingunga Canal, for which a survey estimate was sanctioned in Government of India letter No. 1884-I., dated the 22nd December 1914, and the feeder channel to the Ramtek tank would be constructed from the reservoir in connection with that scheme if found suitable. This feeder channel would, however, only be justified financially if taken up in conjunction with the Lower Waingunga Scheme (now the Kanhan River Scheme), and it will therefore be considered and reported on when the investigations for that scheme are completed, unless the investigations still in hand show that a less costly alternative is feasible. It is not possible at this stage to forecast what the tank would accomplish if it were filled each year to its designed irrigation capacity. A forecast has, however, been drawn up showing what it will be able to do if it is left as it stands, that is to say, if no further expenditure is incurred in increasing the catchment area. It will be observed that the average volume available for irrigation in the tank during the years 1911-12 to 1915-16 was 1,344 M. cft., as compared with a designed irrigation capacity of 4,059 M. cft. The tank was, therefore, not filled to more than one-third of its designed irrigation capacity. Development is certain to be slow, especially as the nature of the soil and the backwardness of the cultivators will also militate against rapid progress in the irrigation of crops. It is estimated that 10 years after the completion of the project the net revenue will be Rs. 42,900 or about 1 per cent on the capital outlay, including interest: but given a full tank, and an expanding area of sugarcane and orchards in the vicinity of the tank the results might become very different to those hitherto obtained.

I have the honour to be,

Sir,

Your most obedient Servant,

A. J. WADLEY,

Joint Secretary.

Enclosures.—

(i) Note dated the 15th August 1916 by Mr. G. H. Forrest, Executive Engineer, Kanhan Division.
(ii) Financial forecast on Public Works Department Form No. 155.
(iii) Note by the Hon'ble Mr. H. A. Crump, Financial Commissioner.
(iv) Note by Mr. R. H. Tickell, late Chief Engineer.
(v) Completion Report by Mr. H. W. Hallifax, Executive Engineer.
(vi) Statements A, B and C.
(vii) Index map.

Note, dated the 15th August 1916, by Mr. G. H. Forrest, Executive Engineer, Kanhan Irrigation Division, regarding the notes and data on which final financial forecast is made.

The tank gauge records of the foregoing five years are as follows :—

Year.	Rainfall Khindsi gauge.	Binnie's percentage.	Actual run-off. M. cft.	Percentage of yield.	Evaporation and other losses recorded during the year. M. cft.	Supplies available net. M. cft.	Percentage of losses to gross supplies.	Quantity stored on 1st June. M. cft.
1	2	3	4	5	6	7	8	9
							Per cent.	
1911-12 ...	52·04	45·6	1,548	...	524	1,024	34	1,458
1912-13 ...	43·3	39·7	1,847	...	632	1,215	34	969
1913-14 ..	40·8	37·7	1,196	...	286	910	23	307
1914-15 ...	34·6	31·6	924	...	184	740	20	431
1915-16 ...	33·7	30·7	1,204	...	335	869	28	839
Totals ...			6,719	...	1,961	4,758		
Averages ...			1,344	...	392	952	29	

The figures on which the Project was based are Rainfall (Ramtek) 44·67, mean yield (Binnie's 40 per cent.) 3,469·9 M. cft.

A scrutiny of the above indicates clearly that the rainfall has generally been considerably under normal, though the deficiency has not been noticed in the records of gauges situated immediately South and West of the catchment area, while recent though incomplete observation of rainfall at six stations within the catchment area, indicates that the Khindsi gauge, probably represents the average rainfall on the catchment area.

By taking an average of the yields of five years, including four successive years in which rainfall was deficient, the resultant should represent the quantity which can safely be depended upon under normal conditions.

The tabulated figures also show that the total loss by evaporation, etc., depends to a great extent on the amount of water which has been carried over. The percentage varies from 34 per cent in 1912, when 1,458 M. cft. of water were stored on 1st June of that year to 20 per cent in 1915, when 431 M. cft. were carried over.

When the tank is fully developed, and the amount carried over from year to year, sufficient only to start kharif nurseries, and perhaps provide a partial Kharif watering, the percentage of loss on the gross supply may be rated at the minimum percentage already observed, *viz.*, 20 per cent, and therefore the dependable average may be taken at 80 per cent of 1,344 M. cft. or 1,075 M. cft.

It is unnecessary to provide for the amount to be carried over out of the average supply reaching the tank ; at most it would be part of the amount required for kharif, and would amount to 111 M. cft. brought out as follows :—

Actual area of nurseries for 8,000 acres ...	=	533 acres.
Providing for 2 (two) 6″ waterings or 44,000 cft. per acre.	=	23 M. cft.
One 6″ watering over 50 per cent of total area or 4,000 × 22,000.	=	88 ,,
		111 ,,

Irrigation.

Kharif.—In his letter No. 3388—11, dated the 27th June 1914, the Commissioner, Nagpur, estimates that the ultimate rice area under the tank will be 10,000 acres, while the fully protected area is 8,000 acres. For the purpose of the present estimate the latter figure is taken as the area for which there will be steady demand on full development.

Hitherto the duty of water in Kharif irrigation under Ramtek has been extremely low owing chiefly to (*a*) length of channels, (*b*) want of care on the part of the irrigators, (*c*) there has been no occasion to restrict supplies, and issues have been liberal. The actual figures in the five successive years, 1911 to 1915 are, respectively, 3·3, 1·05, 0·98, 4·5 and 6·8 acres per M. cft. In the same period, however, the average duty on Khairbanda tank, which irrigates a more or less similar area, though through shorter channels, is 22·7 acres per M. cft., the minimum being 21·3 acres per M. cft. It is assumed that with the larger channels on Ramtek an average duty of 16 acres per M. cft. will be obtainable, and the quantity of water required will consequently be $\frac{8,000}{16}$ or 500 M. cft.

Rate of expansion of irrigated area.—The past records do not give an indication of what may be expected. The area in 1915 was the lowest recorded in five years, owing to plentiful and late extension of the rains, and further, seed distribution centres had not been opened in the Bhandara area, until the current year.

In the year 1914 the area irrigated was 3,082 acres, and while considerably less than the areas irrigated in the previous two years (see marginal note) it appears to represent normal expansion up to that year, and give the starting point on which future expansion may be based. This latter is estimated to be 1,000 acres in three years, giving in all practically 15 years for the full development of the Kharif area. The area anticipated in 1916 is therefore, 3,700.

	Kharif area irrigated
1911 ...	2,381
1912 ...	4,171
1913 ...	5,503
1914 ...	3,082
1915 ...	2,081

Rates.—Up to date the Kharif rate has been Rs. 2-8 per acre. It is assumed that it will remain so for the next 5 years. In the season of 1921 it will be increased to Rs. 3, and in 1926 the assumption of a further increase of As. 8 will bring it up to Rs. 3-8-0 per acre.

Rabi.—It has already been shown that the average dependable supplies, including due allowances for all ordinary tank losses, are 1,075 M. cft., of which Kharif will require 500 M. cft. leaving 575 M. cft, available for Rabi.

Wheat and Miscellaneous Rabi.—Under this head the returns to date have been extremely low. In 1915-16 an area of 207 acres were irrigated, of which 100 acres were Howra wheat, 50 acres late wheats (Pissi and Pusa 12), and the remainder miscellaneous crops, such as gram, cotton, groundnut (32 acres), linseed and jawari (16 acres). The future depends almost entirely on late wheat cultivation, though something may possibly be expected of groundnut, and jawari. It is estimated that the expansion of wheat area will be—1915-16 (actual) 50 acres, 1916-17 500 acres (based on application for seed); and the probable expansion in the future will be 250 acres per annum. Inclusive of the last two crops, for which some future is anticipated, a general expansion of 300 acres per annum is anticipated, to a maximum, under the present proposals, of 2,000 acres.

Cane.—There does not seem to be much prospect of expansion of cane. It is a crop requiring, to make it a success, considerable capital, and great care and skill in cultivation. Facility for crushing is limited, as also is the market for chewing cane. At present it is popular only among a few resident malguzars, and so far as small growers are concerned it has been a failure. It is estimated that the expansion will be at the rate of 50 acres per annum, reaching a steady limit of 400 acres. The area in the current year is 60 acres approximately. The reduction is due principally to the exclusion of small isolated areas, and also to concentration nearer to source of supplies.

Kela.—Expansion up to 500 acres is anticipated at the rate of 50 acres per annum The area this year is expected to be about 250 acres. Kela is a popular and valuable crop, the cultivation of which is understood by the cultivators generally.

Fruit garden (*oranges, guavas, etc.*).—The area last year was 180 acres, and several new gardens have been laid out. Expansion, however, is likely to be slow, probably not more than 25 acres per annum. For the purpose of the present estimate, 500 acres maximum is proposed.

Miscellaneous Garden.—The area irrigated last year was 165 acres, and expansion up to 1,000 acres is anticipated at the rate of about 100 acres per annum.

Water-nut.—There is no future for this source of revenue. The area up to date is negligible, and it is not included in the general estimate of prospects of irrigation and revenue.

General.—In the last three years the figures of rabi irrigation have been practically stationary. The area in 1913-14 was 850 acres, and since then it has been necessary to cut down supplies to reasonable figures, and introduce some definite system of distribution. This was not appreciated in 1914-15, when it was started, and there was a slight decrease of garden area in 1915-16, which, by the way, was compensated by expansion of the wheat area, but I am confident that the cultivators now appreciate the benefit of regular waterings and as the large majority of them now understands that good crops (excepting in one or two instances) can be grown successfully with weekly waterings, there is every reason to believe that the proposed rates of expanson will be realized.

Rates.—The following statement shows the future water-rates suggested :—

	Rabi.	Cane.	Kela.	Orange, Guavas, etc.	Miscellaneous garden.	Water-nut.
Up to 1915	2	5 & 7	...	6	6	8
1916-21	1	10	10	6	6	8
1922-26	2	15	15	8	8	8
1927	2	20	20	10	10	8

Miscellaneous Revenue.—In 1915-16 the amount realized from tank bed cultivation, lease of fishing rights, and sales of grass, and from other miscellaneous sources, such as sales of water, rent of bungalow, etc., amounted to Rs. 13,165. There is no reason to anticipate any falling off in this direction, and it is expected that the revision of method of disposing of the tank bed, and grass areas inaugurated this year will result in considerable increase. It is estimated that the returns under miscellaneous will reach Rs. 15,000 yearly within the next 5 years, and remain steady at that figure.

Indirect Revenue.—In the report by the Financial Commissioner, embodied in the revised estimate of the project, it is estimated that the indirect revenue will amount, on full development, to Rs. 18,733. The detail of this estimate is shown in margin. With regard to the first two items no enhancement of revenue has been made in the recent Nagpur and Bhandara settlements. Under item 3 it is unlikely that the present proposal requires that more than a few hundred. acres of existing waste will be brought under cultivation. There is certainly a tendency to lay out fruit gardens in existing waste land. Of orange, kela and guava gardens there are about 450 acres at present, and expansion up to 1,000 is anticipated. Of this, allowing that half will be laid out on existing waste land, we can only count on $\frac{550}{2} = 275$ as area on which owner's rate may be expected, and the amount is trivial. Up to the end of 1914-15, 60 acres of waste had been brought under cultivation, yielding Rs. 30, and it is not known what further area has been reclaimed in last year, 1916-17. For the future garden area as above, and wheat area amounting to 2,000 acres altogether, might be treated in the same manner. Both developing in 6 years.

	Rs.
Rice area protected 8,248 – 1305 @ Re. 0-4-0 ...	1,736
On rabi holdings, 73,582 @ Re. 0-2-6 ...	11,497
Existing waste likely to come under cultivation, 6000 @ Re. 0-8-0	3,000
Miscellneous	1,000
Avoidance of remission	1,500

This indirect revenue cannot be included under direct revenue : it has been cut out. E. S. L. B.

		Rs.
275 @ Re. 0-8-0	...	137
1,000 @ Re. 0-8-0	...	500
		637
Say	...	636
Average	...	106

In the estimate of revenue anticipated, I have included the sums noted in margin as direct receipts. They are the shares of increased land revenue on existing waste land which is likely to be brought under cultivation in irrigated crops, and I have left the column of indirect revenue entirely blank.

It would appear that the last two items of the abstract of Financial Commissioner's estimate cannot find place in the present estimate.

Charges.—It is estimated that the future charges need not greatly exceed those of the previous 3 years, which show an average of Rs. 19,077. The only considerable increase anticipated is panchayat's commission, and the future charges are estimated at Rs 20,000 per annum.

APPENDIX I.

Statement of Irrigation Forecast.

Crop.	1916-17.			1917-18.			1918-19.			1919-20.			1920-21.			1921-22.			1922-23.		
	Area.	Rate.	Amount.	Area.	Rate.	Amount.	Area.	Rate.	Amount.	Area.	Rate.	Amount.	Area.	Rate.	Amount.	Area.	Rate.	Amount.	Area.	Rate.	Amount.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
		Rs. a.	Rs.		Rs. a.	Rs.		Rs. a.	Rs.		Rs. a	Rs.	Rs.	Rs. a.	Rs.	Rs.	Rs. a,	Rs.	Rs.	Rs. a	Rs.
Kharif ...	3,700	2 8	9,250	4,000	2 8	10.000	4,400	2 8	11,000	4,700	2 8	11,750	5,000	2 8	12,500	5,400	3 0	16,200	5,700	3 0	17,100
Wheat ...	500	1 0	500	800	1 0	800	1,100	1 0	1,100	1,400	1 0	1,400	1,700	1 0	1,700	2,000	2 0	4,000	2,000	2 0	4,000
Cane ...	60	10 0	600	110	10 0	1,100	160	10 0	1,600	210	10 0	2,100	260	10 0	2,600	310	15 0	4,650	360	15 0	5,400
Kela ...	250	10 0	2,500	300	10 0	3,000	350	10 0	3,500	400	10 0	4,000	450	10 0	4,500	500	15 0	7,500	500	15 0	7,500
Fruit Garden ...	200	6 0	1,200	225	6 0	1,350	250	6 0	1,500	275	6 0	1,650	300	6 0	1,800	325	8 0	2,600	350	8 0	2,800
Oranges, Guavas Garden ...	200	6 0	1,200	300	6 0	1,800	400	6 0	2,400	500	6 0	3,000	600	6 0	3,600	700	8 0	5,600	800	8 0	6,400
Total ...	4,910	...	15,250	5,735	...	18,050	6,660	...	21,100	7,485	...	23,900	8,310	...	26,700	9,235	...	40,550	9,710	..	43,200
			13,560			13,920			14,280			14,640			15,000			15,000			15,000
Miscellaneous ...			28,810			31,970			35,380			38,540			41,700			55,550			58,200

Crop.	1923-24.			1924-25.			1925-26.			1926-27.			1927-28			1928-29			1929-30		
Kharif ...	6,000	3 0	18,000	6,400	3 0	19,200	6,700	3 0	20,100	7,000	3 8	24,500	7,400	3 8	25,900	7,700	3 8	26,950	8,000	3 8	28,000
Wheat, etc. ...	2,000	2 0	4,000	2,000	2 0	4,000	2,000	2 0	4,000	2,000	2 0	4,000	2,000	2 0	4,000	2,000	2 0	4,000	2,000	2 0	4,000
Cane ...	400	15 0	6,000	400	15 0	6,000	400	15 0	6,000	400	20 0	8,000	400	20 0	8,000	400	20 0	8,000	400	20 0	8,000
Kela ..	500	15 0	7,500	500	15 0	7,500	500	15 0	7,500	500	20 0	10,000	500	20 0	10,000	500	20 0	10,000	500	20 0	10,000
Fruit Garden ..	375	8 0	3,000	400	8 0	3,200	425	8 0	3,400	450	10 0	4,500	475	10 0	4,750	500	10 0	5,000	500	10 0	5,000
M. Garden ..	900	8 0	7,200	1,000	8 0	8,000	1,000	8 0	8,000	1,000	10 0	10,000	1,000	10 0	10,000	1,000	10 0	10,000	1,000	10 0	10,000
Total ...	10,175	...	45,700	10, 700	...	47,900	11,025	...	49,000	11,350	...	61,000	11,775	...	62,650	12,100	..	63,950	12,400	...	65,000
Miscellaneous ...			15,000			15,000			15,000			15,000			15,000			15,000			15,000
			60,700			62,900			64,000			76,000			77,650			78,950			80,000

APPENDIX II.

Comparison of proposed duties with those already obtained on Remtek during the season 1915-16.

The duty for Kharif has already been discussed.

Rabi duty.

The propsals are :—

2,000	acres	Rabi consisting of wheat, gram, etc., at	40	acres per M.cft.,	50	M.cft.
400	,,	cane	3	,,	133	,,
1,000	,,	garden	6	,,	166	,,
500	,,	fruit garden	10	,,	50	,,
500	,,	kela	3		166	,,
4,400					565	M. cft.

It has already been shown that there will be 575 M. cft available for rabi. Excluding ordinary rabi, for which, owing to the limited and scattered area to be served, 25,000 cft. per acre is allowed, and should easily include sufficient provision for channel losses, we have the following average :

Area.		Duty.		Duty × area.
400	×	3	=	1,200
1,000	×	6	=	6,000
500	×	10	=	5,000
500	×	3	=	1,500
2400				13,700

average duty per acre $= \frac{137}{24} = 5{\cdot}7$

The actual figures of 1915-16 were 859 acres irrigated at the expense of 184 M. cft. issued through the sluice between 1st December and 31st May, and included miscellaneous supplies to Bengal-Nagpur Railway, village tanks, channel losses, and waste. The present system of 48 hours' flow in channel had been introduced in January, the figures being 43 M. cft. in December, 27 M. cft. in January, and 20 M. cft. in February, from which it is evident that 30 M. cft. of water could have been saved, and will be saved in future years. Again, the supplies under the revised system were given on a liberal scale, the object being to shorten the period of watering only, and a good deal of waste occurred in (*a*) unnecessarily heavy watering, (*b*) additional discharge given to compensate losses in bad water-courses. The increased pressure on pats generally due to the shortening of period of watering made leniency in the latter respect very necessary. I estimate that the sum of those losses, together with the unavoidable high percentage of losses in irrigating limited and scattered areas amounted at least to the quantity which would be required had the rabi area been miscellaneous garden, and taking the gross figure of 869 acres (some supplementary figures have been added to the figures already reported) the noted duties were:—

As per issues ... ... $\frac{869}{184} = 4{\cdot}7$ acres per M. cft.

As per revised issue, deducting wastage of 30 M. cft. in December and January. $\frac{869}{154} = 5{\cdot}6$ acres per M. cft.

There is, therefore, every reason to suppose that the figure of 5·7 acres per M. cft. proposed on full development of both irrigation and system of distribution will easily be maintained, if not improved upon.

As already noted, the actual figure included supplies to tanks and channel losses. The latter will tend to diminish as the channel banks settle and the proportion to decrease as area increases. There is, therefore, ample margin in this direction also.

Copy of letter No. 2020, *dated* 15*th August* 1916, *from the Deputy Director of Agriculture, Southern Circle, to the Executive Engineer, Kanhan Irrigation Division, Kamptee.*

I have the honour to say that I am of opinion that the expansion in irrigation and revenue anticipated under Ramtek tank, as outlined in the statement forwarded with your letter No. 4196, dated the 6th August 1916, is not too optimistic, except perhaps for garden crops. I should not think there is any chance whatever of the area under "Gardens," which I take to mean vegetable gardens, increasing by 100 acres a year up to a maximum of 1,000 acres in 8 years. On the other hand, I am confident that the area under fruit gardens will increase faster than is anticipated by about 50 acres per annum.

A yearly increase of from 300—400 acres in the area of rice irrigated may be reasonably expected as the result of the work now being done in the way of propagating and distributing Gurmatia, a late and very heavy yielding variety, which is dependent on irrigation. The area under cane should increase by approximately 50 acres a year if water is given for cane cultivation both in Bhandara and Ramtek. I have no figures at my disposal on which to base an estimate as to the quantity of water likely to be available for cane after providing for the anticipated increase in the area of the other irrigated crops grown under the tank. I am not therefore in a position to say whether it will be possible to find water for 400 acres.

The rate at which the irrigated wheat area can be increased will depend on two factors, (i) the rainfall between the 1st of November and the 1st of February, and (ii) the area of our later and better varieties of wheat grown. I anticipate that in five years there will be at least 2,000 acres under the new varieties, but whether they will irrigate such a large area or not is somewhat doubtful, though I am inclined to believe that they may, if the seasons are suitable and if our system of seed distribution proves to be as successful as we anticipate.

No. 4473.

Dated Kamptee, the 19*th August* 1916.

Copy is forwarded to the Superintending Engineer, Western Irrigation Circle, Central Provinces, with reference to this office No. 4403, dated 16th August 1916.

A higher rate of expansion of the fruit (orange) garden area would be very acceptable as the duty is more favourable, *viz.*, 10 acres per M. cft. for orange as compared with 6 acres per M. cft. for miscellaneous garden, but so far as revenue is concerned, the gain on one will practically compensate the loss on the other.

In consideration of the market question, the prospect for oranges which can be grown for a distant market, once established, are probably greater than those of miscellaneous garden for which a more or less local market is essential.

The question of supplies of water have been fully discussed in my note, and there appears to be ample for increase of orange area as against less increase than I have proposed under miscellaneous garden.

G. H. FORREST,

Executive Engineer,

Kanhan Irrigation Division.

P. W. D. Form No. 155.

RAMTEK RESERVOIR PROJECT.

PART I.

Summary of the estimated direct charges to Capital Account.

Year.	Works.	Establishment.	Tools and Plant.	Total.	Less receipts on Capital Account.	Net total.
1	2	3	4	5	6	7
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
First, 1906-07	70,110	14,732	20,785	1,05,627	...	1,05,627
Second, 1907-08	3,21,970	73,970	12,291	4,08,231	8	4,08,223
Third, 1908-09	6,05,350	1,28,751	11,155	7,45,256	34	7,45,222
Fourth, 1909-10	6,43,131	1,07,724	2,339	7,53,194	856	7,52,338
Fifth, 1910-11	3,24,806	68,675	—662	3,92,819	2,795	3,90,024
Sixth, 1911-12	1,76,140	39,666	2,346	2,18,152	3,191	2,14,961
Seventh, 1912-13	70,499	13,974	785	85,258	...	85,258
Eighth, 1913-14	32,100	6,196	—3,406	34,890	...	34,890
Total ...	22,44,106	4,53,688	45,633	27,43,427	6,884	27,36,543

RAMTEK RESERVOIR PROJECT.

PART II.

Summary of the estimated indirect charges to Capital.

Year.	Capitalization of Land Revenue abated.	Charges for Leave and Pension Allowances.	Total.
1	2	3	4
	Rs.	Rs.	Rs.
First, 1906-07	...	2,062	2,062
Second, 1907-08	...	10,356	10,356
Third, 1908-09	...	18,025	18,025
Fourth, 1909-10	125	15,081	15,206
Fifth, 1910-11	78,239	9,615	87,854
Sixth, 1911-12	...	5,553	5,553
Seventh, 1912-13	...	1,956	1,956
Eighth, 1913-14	375	867	1,242
Total ...	78,739	63,515	1,42,254

N. B.—The figures in column 3 are calculated at 14 per cent. on the corresponding figures in column 3 of Part I.

NOTE.—The differences between the figures shown in Parts I and II above, and the Completion Report for this Project are due to the expenditure shown in the former being up to end of March 1914, which includes adjustments in March final accounts, and that in the latter to end of February 1914.

P. W. Form No. 155.

RAMTEK RESERVOIR PROJECT.

PART III.

Estimate of growth of Irrigation and Revenue Receipts and Charges.

Year.	Irrigated area at end of year.	Revenue Receipts and Charges.						Remarks.
		Gross Revenue due to works.			Charges, both direct and indirect, against Revenue Account.	Net revenue due to works.		
		Direct receipts.	Enhanced Land Revenue or Indirect Revenue.	Total.		Including enhanced Land Revenue.	Excluding enhanced Land Revenue.	
1	2	3	4	5	6	7	8	9
	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Fourth ...	...	...	...	...	...	...	...	
Fifth, 1910-11 ...	387	5,460	...	5,460	24	5,436	5,436	
Sixth, 1911-12 ...	2,752	3,503	...	3,503	1,286	2,217	2,217	
Seventh, 1912-13 ...	4,802	18,568	...	18,568	8,169	10,399	10,399	
Eighth, 1913-14 ...	6,353	23,901	...	23,901	15,414	8,487	8,487	
Ninth, 1914-15 ...	3,921	20,044	30	20,074	23,835	—3,761	—3,761	
Tenth, 1915-16 ...	2,940	21,590	...	21,590	16,819	4,771	4,771	
Eleventh, 1916-17 ...	4,910	28,810	...	28,810	20,000	8,810	8,810	
Twelfth, 1917-18 ...	5,735	31,970	...	31,970	20,000	11,970	11,970	
Thirteenth, 1918-19 ...	6,660	35,380	...	35,380	20,000	15,380	15,380	
Fourteenth, 1919-20 ...	7,485	38,540	...	38,540	20,000	18,540	18,540	
Fifteenth, 1920-21 ...	8,310	41,700	...	41,700	20,000	21,700	21,700	
Sixteenth, 1921-22 ...	9,235	55,550	...	55,550	20,000	35,550	35,550	
Seventeenth, 1922-23 ...	9,710	58,200	...	58,200	20,000	38,200	38,200	
Eighteenth, 1923-24 ...	10,175	60,700	...	60,700	20,000	40,700	40,700	
Nineteenth, 1924-25 ...	10,700	62,900	...	62,900	20,000	42,900	42,900	
Twentieth, 1925-26 ...	11,025	64,000	...	64,000	20,000	44,000	44,000	
Twenty-first, 1926-27 ...	11,350	76,000	...	76,000	20,000	56,000	56,000	
Twenty-second, 1927-28 ...	11,775	77,650	...	77,650	20,000	57,650	57,650	
Twenty-third, 1928-29 ...	12,100	78,950	...	78,950	20,000	58,950	58,950	
Twenty-fourth, 1929-30 ...	12,400	80,000	...	80,000	20,000	60,000	60,000	

RAMTEK PROJECT.

PART IV.

Estimate of net financial results of ten years after the probable date of completion of the work.

Year.		Direct Capital outlay during the year.	Direct Capital outlay to end of year.	Simple interest at 4 per cent on Capital outlay to end of previous year *plus* half outlay during the year.	Net reveune, including enhanced Land Revenue, column 7 of Part III.	Simple interest less net revenue.	Net revenue less simple interest.
1		2	3	4	5	6	7
		Rs.	Rs.	Rs.	Rs.	Rs.	
First,	1906-07	1,05,627	...	1,815	..	1,815	
Second,	1907-08	4,08,223	5,13,850	10,568	...	10,568	
Third,	1908-09	7,45,222	12,59,072	29,998	...	29,998	
Fourth,	1909-10	7,52,338	20,11,410	54,911	...	54,911	
Fifth,	1910-11	3,90,024	24,01,434	74,511	5,436	69,075	
Sixth,	1911-12	2,14,961	26,16,395	85,328	2,217	83,111	
Seventh,	1912-13	85,258	27,01,653	93,066	10,399	82,667	
Eighth,	1913-14	34,890	27,36,543	92,120	8,487	83,633	
Ninth,	1914-15	14,653	27,51,196	96,014	—3,761	99,775	
Tenth,	1915-16 } Chargeable to open capital account.	—3,345	27,47,851	96,233	4,771	91,462	
Eleventh,	1916-17	2,500	27,50,351	1,09,964	8,810	1,01,154	
Twelfth,	1917-18	1,800	27,52,151	1,10,050	11,970	98,080	
Thirteenth,	1918-19	...	27,52,151	1,10,086	15,380	94,706	
Fourteenth,	1919-20	...	27,52,151	1,10,086	18,540	91,546	
Fifteenth,	1920-21	..	27,52,151	1,10,086	21,700	88,386	
Sixteenth,	1921-22	..	27,52,151	1,10,086	35,550	74,536	
Seventeenth,	1922-23	...	27,52,151	1,10,086	38,200	71,886	
Eighteenth,	1923-24	...	27,52,151	1,10,086	40,700	69,386	
Nineteenth,	1924-25	...	27,52,151	1,10,086	42,900	67,186	
Twentieth,	1925-26	...	27,52,151	1,10,086	44,000	66,086	
Twenty-first,	1926-27	...	27,52,151	1,10,086	56,000	54,086	
Twenty-second,	1927-28	...	27,52,151	1,10,086	57,650	52,436	
Twentyi-third,	1928-29	...	27,52,151	1,10,086	58,950	51,136	
Twenty-fourth,	1929-30	...	27,52,151	1,10,086	60,000	50,086	
	Net ...	...	27,52,511	21,75,610	5,37,899	16,37,711	

G. H. FORREST,
Executive Engineer,
Kanhan Division.

Govt. Press, Nagpur :—No. 1721, P. W. D.—19-2-17—50.

Note, dated the 30th September 1915, by the Hon'ble Mr. H.A. Crump, C.S.I., I.C.S., Financial Commissioner, Central Provinces, on the Completion Report of the Ramtek Tank.

As the Notes by all the officers on the Project show, the Ramtek Project in its present form is a failure. It does not fill, and the results of irrigation obtained are not in accordance with the forecast framed by Revenue Officers, when it was designed.

So far as kharif and sugarcane are concerned, the estimate of the Revenue Officers would be fulfilled, if water were available, and I have no doubt that rates as high as Rs. 4 per acre for rice and Rs. 20 per acre for cane could be obtained ultimately.

The estimate of rabi irrigation has not been reached, and all the notes of present officers show that it is very doubtful, whether apart from sugarcane and garden and fruit crops, there is any likelihood of rabi irrigation developing. It must be remembered that the growing of rabi crops with irrigation is but little practised in any part of these Provinces, and that the experiments of the Agricultural Department carried out at the Tharsa Farm in this area, have failed to find a really successful method of using irrigation for wheat, or a rabi crop which is suited to the tract and requires irrigation.

The Agricultural Department may be able to solve this problem, but for the present the project will have to rely entirely on kharif and cane and garden crops for its revenue.

As at present designed, I agree with the Commissioner that we cannot expect more than 10,000 acres of kharif and 2,000 acres of garden crops, which may ultimately yield us an income of Rs. 80,000 when the people are satisfied that water for this area can be really guaranteed.

2. The portion of the tract, which the project commands, that yields the largest return, is that along the Sur river, and in the Bhandara district. The project at present has no left bank channel on the Sur river, but a cursory examination of the soils and cropping of the area which such a channel would command leads me to the conclusion that there is scope for the extension of irrigation by the construction of such a channel, if additional water could be made available.

The note by the Chief Engineer shows that the cost of bringing additional water from the Pench river, would be Rs. 22,12,994. To this would have to be added the cost of increasing the storage area of the tank, and the cost of construction of the left bank channel, neither of which have yet been estimated. The Note by the Director of Agriculture discusses this question, but the details are not sufficiently accurate to enable me to give a final opinion. I believe that it would be possible to command at least 15,000 acres of rice land in the new area which this channel would tap, and which is at present very poorly protected against drought. Now the additional expenditure involved in this connection with the Pench river and the construction of a left bank channel, should be regarded as a new project, for we are already committed to the existing project and its prospects, and it appears to me to have sufficient promise to deserve further investigation. Its value as a protective work would be high, and it is possible that it might prove a productive work.

A less costly alt native might found, investig tions are still hand.

A. J. WADL

Note, dated the 5th August 1915, by Mr. R. H. Tickell, C.I.E., M.I.C.E, Chief Engineer, Irrigation Branch, Central Provinces, on the Completion Report of the Ramtek Tank.

The work has been fully reported on by the Executive Engineer and Superintending Engineer, and as from an engineering point of view it is a failure, it is necessary to explain the reasons for it and at the same time to suggest improvements, so that we may get the best possible value for all the expenditure that has been already incurred, and in order that this, one of the first major works attempted in the Central Provinces, may not affect the reputation of the Central Provinces as a tract for irrigation works.

2. The work was originally recommended to be taken up by the Famine Commission for a cost of about 12 lakhs of rupees, and had expenditure been restricted to this, or even less, a far better-proportioned scheme might have been designed. Unfortunately, however, a most ambitious work costing 29 lakhs of rupees has been constructed under very incorrect assumptions, and the resulting disappointments are greatly intensified.

3. The initial fault is that the tank is needlessly large.

The catchment area is 82 square miles and the mean annual rainfall is 44·9 inches. In the Central Provinces it is usual to design small tanks with a capacity not greater than 50 per cent of the normal flow-off. Had this safe rule been adopted the size of the tank would have been 1,700 m. cft. For a large tank like this 40 to 45 per cent of normal

flow-off would have been better. Referring to the table of storages obtained in the 3 years, 1911, 1912 and 1913, given in paragraph 6 of the Superintending Engineer's note, the storage obtained is as follows:—

				M.Cft.
in 1911	...	...	...	1,582
1912	...	...	...	1,692
and in 1913	...	...	...	1,313

The mean of 3 years is 1,529 m. cft. of which 1,450 m. cft. would have been available for irrigation.

4. The duty assumed in the project was 48,000 acres to be irrigated with 4,059 m. cft. which is equivalent to 11·8 acres per m. cft. This is not an incorrect duty to assume, and, had the tank always filled, it might have been worked up to, so long as the area of sugar-cane and garden crops was not too great, and provided the channels were designed to irrigate as near the tank as possible. This seems to be a somewhat incorrect statement to make if the actual duty obtained to date is considered. Thus in 3 years with an average annual storage of 1,529 m. cft. the average annual irrigation has been 5,022 acres, equivalent to 3·3 acres per m. cft. The reason for this low duty is undoubtedly the enormous waste that occurs in trying to irrigate with an average of 1,529 m. cft. an area designed for 4,058 m. cft., the difficulties of the problem being further increased by the fact that the Ramtek Canal is designed to irrigate only 52 per cent of the culturable commanded area of the tract. The result is that, if only 5,022 acres are irrigated out of a tract containing 92,493 acres, it means that only 5½ per cent of the commanded tract is irrigated.

It is obvious therefore that enormous loss must occur before water reaches the distant fields, which in some cases may be 24 miles from the tank.

5. The work therefore may be said to be a failure because it is badly proportioned, and the light of subsequent experience shows that for a catchment area of 82 square miles we should have designed a tank of 1,736 m. cft. with about 1,650 m. cft. available for irrigation. The duty of 11·8 acres per m. cft. would have given an irrigated area of 19,470 acres to be irrigated, and the culturable commanded area should not have exceeded this by more than 25 per cent, *i. e.*, the irrigated tract should have been restricted to about 24,000 to 25,000 acres.

The cost of such a scheme should have been about 9 lakhs of rupees, and, assuming that the net revenue would have been Rs. 3 an acre, the profits would have been about Rs. 58,000 for 9 lakhs expenditure, equivalent to about 6½ per cent. Even if only 6,000 acres were irrigated the result would not have been objectionable for a protective work.

6. In justice to the local engineers it must be pointed out that in June 1904 the Superintending Engineer, Mr. Harriott, was careful to take the advice of the Inspector-General of Irrigation (Mr. Preston) in fixing the capacity of the tank during a visit to Simla. In No. 744-I., dated the 30th May 1907, the Secretary to the Government of India in the Public Works Department forwarded a note, by Mr. (now Sir John) Benton, for guidance in designing Irrigation Works. In paragraph 8 of that note Sir John Benton advised that tanks should be designed to hold the full normal flow-off.

The Ramtek tank, assuming an average rainfall of 44·9 inches, would, according to Binnie (the authority on the subject whose percentages are followed in the Central Provinces) have had a normal flow-off of 3,501 m. cft. The tank, as accepted by Mr. Preston, was, however, constructed to hold 4,138 m. cft., equal to 118 per cent of Binnie's normal flow-off, while events have proved that it should have been designed for 45 to 50 per cent of the normal flow-off.

It would seem therefore that the advice given in the Public Works Department Circular already referred to needs revision, and this is I think fully admitted by Mr. Nethersole the present Inspector-General.

7. Fortunately, however, Ramtek tank can be made efficient if a supply channel is constructed to it from the Pench river. Such a channel has been designed and estimated, but it could only be taken up as a commercial success if constructed in conjunction with the right bank canal of the Lower Weinganga Canal, or as it may more correctly be named the Kanhan Canal, which is now being surveyed.

The feeder channel has been fully surveyed and estimated.

It is 17 miles long, and has a designed capacity at Head of 600 cusecs, which would be sufficient to entirely fill the Ramtek tank in 4 weeks.

The canal goes through extremely difficult ground and needs 7 tunnels of 200 to 500 feet, and one tunnel nearly 4,000 feet in length. It taps the Pench river near the village of Soorera, and takes off from it at a canal bed level 119 feet above the lowest part of the river.

The cost of the Canal and Head Works is as follows :—

		Rs.	
Cost of Canal ...	... ...	9,44,781	
Proportional share of Head Works	... ...	8,05,769	
I—Total Works ...	... ...	17,50,551	
II—Establishment ...	... ...	3,72,916	
III—Tools and Plant ...	... ...	26,017	
IV—Receipts on capital cost	... ...	—1,875	
	Total Direct Charges ...		21,47,609
Capitalization of abatement of Land Revenue	... ...	13,177	
Leave and Pension allowances	... ...	52,208	
	Total Indirect Charges ...		65,385
	Grand Total ...		22,12,994

If therefore the supply channel is ever made, the total cost of the Ramtek canal would be increased from Rs. 29,07,858 to Rs. 51,20,852. There is no doubt that the irrigation of 34,000 to 48,000 acres would be possible, and applying somewhat lower rates than those given by the Financial Commissioner in his Note, dated the 30th September 1915, we may anticipate a revenue of—

		Rs.
24,000 acres kharif at Rs. 4 an acre	... ...	96,000
2,000 acres garden at Rs. 10 do.	... ...	20,000
2,000 acres cane at Rs. 10 do.	... ...	20,000
6,000 acres rabi at Rs. 4 do.	... ...	24,000
Total 34,000 acres Irrigation	... ...	1,60,000
Working expenses, 34,000 acres, at Re 0-12-0	... ...	—25,500
	Net Revenue ...	1,34,500

equivalent to about Rs. 2·6 per cent on the total cost.

Another, and more favourable, way of looking at the proposal is that by an expenditure of Rs. 22,12,994 the revenue of the tank can be increased from Rs. 22,000 to Rs. 1,60,000, *i. e.*, by Rs. 1,38,000, so that about 6·2 per cent can be anticipated on the suggested additional expenditure.

8. It remains, therefore, for the Revenue Officers of the District to say whether they recommend additional expenditure, as indicated, to restore the tank to the efficiency originally contemplated. It is certain that, with a supply channel from a large river like the Pench, the tank would always fill with 4,138 m. cft. and the irrigation of 34,000 to 48,000 acres of land would be possible. I have suggested 34,000 acres, instead of the 48,000 originally estimated, as, if sugarcane and gardens extend to 4,000 acres, the area irrigated would be less than 48,000 acres, but the revenue would not be much affected.

Completion Report by Mr. H. W. Hallifax, Executive Engineer, of the Ramtek Reservoir.

Site of the Tank.

The Reservoir is situated 26 miles north-east of Nagpur in the Ramtek Tahsil of the Nagpur District of the Central Provinces.

(*a*) The site for the bund is unusually favourable, consisting of a fairly narrow cleft in a straight line of hills.

(*b*) The basin of the tank slopes gently towards the north providing a large area for the waterspread—while on the east a long flank dam is necessary.

(*c*) The area under command is bounded by the Sur river on the east, the Sand Naddi on the west, and the Wainganga river on the south.

Historical.

2. The natural advantages of the site attracted attention as early as 1867-68 when a scheme was mooted, and after some correspondence it was decided in 1874 by the Government of India "not to undertake at that time irrigation schemes in the Central Provinces when there seemed so little chance of

either finding sites where works could be constructed at a moderate cost or of obtaining remunerative water rates". Eventually in 1901—03 the project was brought before the Indian Irrigation Commission and was reviewed favourably by them as an experimental work. The remarks of the Irrigation Commission in para. 350 of Part II of their report are as follows :—

"We have been struck by the fact that the local authorities, keen as they are, after the experience of the last few years, on the extension of irrigation in other tracts, are doubtful as to the advisability of carrying out the Ramtek project, which in its present form is estimated to cost not more than about 12 lakhs, and to protect some 32,000 acres, one-half of which is under rice cultivation. They admit that in addition to the rice land there is a considerable area under garden cultivation that much of the black soil which is commanded is probably more suited for rice than for wheat, and that some of the villages did suffer a good deal during the famine. But they think that it is of far greater importance, as a matter of protection against famine, to construct storage works within the rice-growing districts, than to extend irrigation to a tract which, as a whole, was not severely distressed in the late famine, while doubts are still entertained as to whether water will be taken outside the rice area.

"We do not desire to recommend the construction of this work in preference to others, which, in the opinion of the revenue and local authorities, are more urgently needed for purposes of protection, but we hope nevertheless that it may be possible to take it up at no distant date.

"In spite of the doubts as to the suitability of the black cotton soil for irrigation, the project appears to us to involve less financial risk, in proportion to its cost, than any other that has been laid before us; and it would, if carried out, afford important and probably conclusive evidence as to the value of irrigation in the certain varieties of black soil.

"It may be added that, if its execution should be justified either as productive or protective work, it may be possible to proceed with some confidence with the larger and more important Pench scheme, of which the Ramtek project is but a part, but which it is impossible to recommend until experience has been gained, on a smaller but conclusive scale, as to the value of irrigation in this portion of the Nagpur plain.

"The project being more or less ready could be submitted at an early date, though as noted above it was not recommended by the local authorities as a protective work but was taken up purely as an experimental work to test the possibilities of irrigation in this tract."

In letter No. 1623-C.-W.-I., dated the 3rd December 1903, the Government of India called for the opinion of the Local Administration as to whether the project which was prepared in 1867-68 should be sanctioned as originally submitted or in a modified form. It was eventually decided after a committee had considered the matter and the Superintending Engineer had discussed it with the Inspector-General of Irrigation that the original proposals should be reconsidered with slight modifications. The estimate was submitted to the Government of India with Central Provinces Public Works Department letter No. 21—2231, dated the 9th March 1905, and was sanctioned as a protective work for Rs. 17,15,773 by the Secretary of State for India under paragraph 3 of despatch No. 66 which was communicated to this Administration in Government of India letter No. 171—I, dated the 6th February 1906.

(*a*) It was first intended to build a masonry dam on the Sur river. The site appeared favourable for such a work and was well reported on by Sir T. Holland, Director of the Geological Survey, but when the actual excavation for the foundations was well in hand the bed was found to consist of thin layers of rock a good deal cracked and separated by layers of earth. The foundation trench was carried deeper than allowed for in the estimate but the same condition of affairs was found to exist as far as the work went. The matter was then represented by Mr. G. M. Harriott, then Superintending Engineer, to the Government of India, *vide* Central Provinces Public Works Department No. 4—I-1110, dated the 25th February 1907, and in telegram No. 333-W., dated the 5th March, 1907, permission was given by the Government of India to substitute an earthen dam for the masonry dam.

(*b*) A complete revision of the estimate was necessitated during construction due to the following main reasons :—

(i) Necessity for constructing the main dam of the reservoir as an earthen embankment instead of as a masonry dam after considerable work had been done in connection with the masonry dam.

(ii) The manganese mining industry in the vicinity of the work which started in 1901 and was in a most flourishing state at the time work on this project was started in 1906, created a great demand for labour and consequent high rates, so that the estimate as it stood was quite insufficient for the work.

(iii) Omission of provision for much work which had to be done. The number of masonry works on the distributaries had been under estimated, and the maintenance of the tank during the period of its construction had not been provided for. As construction advanced, further distributaries had to be added and extra berms were added to the earthwork of the channel banks as well as of the dams to cover the normal line of saturation through them.

(iv) The direction of the spill channel had to be changed so as to deliver the surplus water at a point where the rock in the nalla was of better quality than at the place originally selected. The change though quite unavoidable had involved several heavy masonry works.

(v) For land compensation a rate of Rs. 20 per acre was allowed in the original estimate on cultivated land, but prices have risen so greatly since the figures were given that the rates allowed proved quite inadequate and had to be raised to Rs. 30 per acre.

(*c*) In the year 1910 a revised estimate amounting to Rs. 27,30,313 for works only and Rs. 29,07,858 including direct and indirect charges was submitted to Government of India with Central Provinces Public Works Department No. 3391, dated the 22nd July 1910, and forwarded to the Secretary of State for India with Government of India No. 36-P.-W., dated the 29th December 1910. This estimate was sanctioned by the Secretary of State for India, *vide* letter No. 7-P.-W., dated the 24th February 1911, copy received with Government of India No. 432-I., dated the 27th March 1911.

(*d*) The work was started in 1906, two special Sub-Divisions being formed for its construction, one for the Head Works with head-quarters at Khindsi near the site of the main dam, and the other for the distributaries with head-quarters at Tharsa about 12 miles from the Head Works Sub-Division. The work was finally completed in 1913. During construction the work was hampered to a great extent owing to the repeated outbreak of cholera among the work people, and difficulty in obtaining labour due to the development of the manganese mining industry in the close vicinity of the works.

Details of the scheme.

3. The following are the chief details of the scheme as constructed :—

Catchment area	...	82 sq. miles.
Mean annual monsoon rainfall	...	44·67 inches.
Mean monsoon yield	...	3,469·98 m. cft.
Gross storage capacity	...	4,138·117 m. cft.
Storage available for irrigation	...	4,058·847 m. cft.
Maximum area it is proposed to irrigate	...	Kharif 24,000 acres. Rabi 24,000 ,,
Cultivated and culturable area commanded	...	92,493 acres.
Water spread area	...	229 m. sq. ft.
L. S. L.	...	996·51
F. T. L.	...	1,039·61
H. F. L.	...	1,044·61
Top of embankment	...	1,050·61 (Main dam.) 1,049·61 (Flank dam.)
Length of embankment	...	Main 752 Feet. Flank 10,600 ,,
Maximum height of embankment..	...	Main 72·8 ,, Flank 30·9 ,,
Maximum depth of water stored ...	...	43·10 ,,
Length of waste weir	...	Effective 510 ,, Actual 517·36 ,,
Maximum discharge at waste weir.	...	18,175 cusecs.
Maximum discharge from sluice ...	...	333·3 cusecs.
Total length of distributaries ...	...	209 miles.

Area which the scheme is estimated to irrigate.

4. In the original estimate the scheme was intended to irrigate 20,000 acres each of wheat and rice. In calculating the size of the main irrigation channel the duty taken was 40 acres per cusec. When the construction of this scheme was started it was decided to work to a duty of 60 acres per cusec for rice and it has been constructed accordingly. In the revised

estimate a duty of 100 acres per cusec has been allowed for rice and an addition of 25 per cent is made to the carrying capacities of the channels for use in emergencies. The main channel as constructed is capable of irrigating 23,700 (say 24,000) acres of rice in normal years.

Description of works.

5. (i) *Main dam.*—In the original estimate provision was made for the construction of a masonry dam across the main nalla, but when the actual excavation for the foundation was well in hand it was found that the rock was very uneven in character and full of cracks, hence an earthen dam was substituted for the masonry dam as approved of by the Government of India in their telegram No. 333-W, dated the 5th March 1907. The section of the dam as constructed and approved by the Government of India in their letter No. 390-I, dated the 16th March 1907, is as follows :—

Top width	...	...	12′
Inner slope	...	...	2½ to 1
Outer slope	...	...	3 to 1
Selected Material ...	Top width	...	8′
	Slopes	...	1½ to 1

A berm 6½ feet wide is provided on the downstream (outer) slope at R. L. 1,000. It will be noted that the top width of berm as approved by the Government of India is 12 feet. The reduction to 6½ feet is made as the inner slope of the embankment above H. F. L. as constructed is 2½ to 1 instead of 2 to 1, and the depth of dry earth over the Hydraulic gradient is the same in both cases. Two key trenches filled with puddle are provided in the upstream portion of the base of the dam. One key trench is placed at the upstream toe of the selected material and the second is placed midway between the upstream toe of the selected material and the main puddle trench. These key trenches have a bed width of 3 feet. The main puddle trench has a bed width of 10 feet and is taken everywhere 10 feet into rock. Where in rock the sides are taken as far as possible vertical and in other material sides are sloped at 4 to 1. Above the level at which a bed width of 22 feet is obtained the sides of the puddle are taken up vertically. Turfing has been provided to the downstream face of the embankment and pitching 1 foot in thickness on the upstream face.

(ii) *Flank embankment.*—This embankment has been constructed of earth as provided for in the sanctioned estimate. The sections adopted are as follows :—

Height of H. F. L. above ground.	Depth of freeboard above H. F. L.	Total height of embankment.	Top width of embankment.	Upstream slope.			Downstream slope.
				Above H. F. L.	Between H. F. L. and F. T. L.	Below F. T. L.	
1	2	3	4	5	6	7	8
0—11	4	0—15	6	1½ to 1	2 to 1	2 to 1	1½ to 1
11—25	5	15—30	8	2 to 1	2½ to 1	2½ to 1	2 to 1
25—34	6	30—40	8	2 to 1	2½ to 1	3 to 1	2 to 1
above 34	6	above 40	10	2 to 1	2½ to 1	3 to 1	2 to 1

A berm has been provided at the outer toe of the embankment so as to allow of 8′ of dry earth over the Hydraulic gradient. This being in accordance with present practice in the design of embankments for major tanks.

A puddle trench has been provided throughout the length of the embankment to a depth considerably in excess of that provided in the sanctioned estimate (equal to half the height of H. F. L. above ground) the reason of this being that a stratum of muram varying from 4 to 6 feet in thickness and frequently mixed with boulders and laterite underlies the clay at depths varying from about 6 to 10 feet. Where possible the sides of the trench have been cut out vertical in the hard strata and in the earth they have been given a slope of 4 to 1. The inner slope of the embankment is covered with 6″ layer of muram over which is laid 1 foot of pitching.

(iii) *Waste weir and escape.*—The waste weir crest is situated towards the north of the flank embankment. The escape is taken out almost due east and delivers into a nalla about 47 chains distant from the crest. Storage has been allowed between F. T. L. and H. F. L. and the residual discharge to be dealt with is 18,175 cusecs. The tank can easily accommodate the yield due to a spate calculated by Dicken's formula with a co-efficient of 1,400 and lasting for 3 hours, that yield being only 412 m. cft. while the capacity between F. T. L. and H. F. L. is 1,160 m. cft. The crest of the weir is formed by a 4½ feet fall. The depth of water upstream of the fall is 5 feet while downstream it is 8 feet, an afflux of 1½ feet being allowed. The weir crest is on a curve of 6½ and the length measured along the chord is 510 feet. The actual length of the crest measured along the curve is 517·36 feet. The bed and surface slopes of the escape immediately downstream of the crest are both 1/2500 which with a depth of water of 8 feet give a velocity of 5·7 feet per second. The bed width of the channel is 391 feet. At chainages 2,750 and 4,250 falls of 6 feet are provided. The length of the crest is in each case 186 feet. The length of crest of the fall at chainage 4,450 is 170 feet. These falls are constructed of coursed rubble masonry but the flooring of the cisterns is of 3″ cement concrete laid on 2·25 feet of lime concrete. Pitching varying in thickness from 2′ to 1′ is provided both up and downstreams of the falls.

(iv) *Sluice.*—The sluice is situated at chainage 135 of the main dam. A circular tower is constructed having an internal diameter of 11′ 2″. In the centre of this tower is fixed a Stoney gate with an opening of 8′×8′ while on upstream face is an ordinary penstock gate. The object of the double control is to minimise the risk of accident as well as to provide facilities for inspection or repairs when necessary. A tunnel of ovoid section takes out of the tower and runs through the embankment, the total length of the tunnel being 221 feet measured from the tower. The tower itself and pillars of the approach bridge are built of stone and the tunnel is constructed of brick, cement concrete blocks being used as skew bricks when the radius of the arch alters. The whole of the outer face of the tower is plastered with cement upto F. T. L., the lower 20′ of plaster being 2″ thick and reinforced with galvanized wire netting fixed on iron spikes, two layers of wire netting being provided. The foundations of both the tower and tunnel are on hard fissured rock.

(v) *Distributaries.*—One main channel and four main distributaries are constructed and from them a number of minor distributaries take off. The main channel carries a discharge of 333 cusecs at head with a depth of 5·5 feet of water. The bed slope is 1 in 10,000. The channel runs practically along the ridge and it is from this channel that all the distributaries are taken off which are as detailed below :—

The total length of the main channel is 130,500 feet or 24½ miles.

Name of Channel.	Name of Distributary.	Chainage of cut off.	Discharge in cusecs.	Length.
				Feet.
A. Distributary ...	B. Distributary ...	7,600	40·58	50,500
Do. ...	C. Do. ...	19,600	46·3	46,300
Do. ...	D. Do. ...	75,500	122·0	87,922
Do. ...	E. Do. ...	Ch. 51,133 of D. Distributary	33·0	33,000

On each distributary there are many minor channels of smaller lengths. The following type has been adopted in construction of channels :—

Discharge in cusecs.	Top width of bank.	Free board.	Cutting slope.	Bank slope.
40—350	5	2	1 to 1	1½ to 1
25—40	3	1·5	1 to 1	1½ to 1
25 and under	3	1	1 to 1	1½ to 1

Financial aspects.

6. Irrigation from this tank was commenced in 1909. The following figures show the area irrigated and the revenue realized since that time :—

Year.	Area irrigated in acres.	Direct revenue.	Miscellaneous revenue.	Total revenue.
		Rs.	Rs.	Rs.
1909-10	322	496	...	496
1910-11	386	1,224	5,208	6,432
1911-12	2,758	6,564	2,637	9,201
1912-13	4,802	13,972	4,924	18,895
1913-14	6,115	17,000	5,000	22,000

These figures are sadly out of proportion to anticipations. The local cultivator has taken some time to appreciate the value of irrigation for rice. Having seen its advantages he now irrigates all the rice land under command; the remainder of the channels command kanhar soil which is not appropriate for rice. Rabi irrigation is an entirely new departure for the district and the process of education by means of the demonstrations and farms of the Agriculture Department is necessarily slow. The cultivation of sugarcane is now showing considerable progress and the value of that crop when once it has been popularized will very probably completely compensate for deficiencies in other directions.

RAMTEK RESERVOIR.

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
Head Works ...	A.—Preliminary ...	Preliminary expenses ...	3,311	...	...	...	...	...	...	3,311	Revised Estimate sanctioned in Secretary of State's Despatch No. 7-P. W., dated the 24th February 1911.	
Do. ...	B.—Land ...	Cultivated land acquired permanently.	1,81,000	...	1,80,720	1,80,720	368 6 7	1,80,720	...	280		
		Uncultivated land acquired permanently	509	376	...	376	...	376	...	133		
		Do. do. acquired for 5 years	568	25	...	25	...	25	...	543		
		Compensation for temporarily acquired land.	700	1,308	...	1,308	...	1,308	608	...		
		Sub-head below Rs. 500 ...	663	—2,255	...	—2,255	...	—2,255	...	2,918		
		Contingencies ...	3,669	1,868	...	1,868	...	1,868	...	1,801		
		Survey and Dagbailing of land ...	2,135	96	...	96	...	96	...	2,039		
		Total for Land Compensation ...	1,89,244	1,418	1,80,720	1,82,138	368 6 7	1,82,138	608	7,714		
Do. ...	C.—Masonry ...	Sluice										
		Excavation in dry rock ...	3,576	—943	...	—943	...	—943	...	4,519		
		Lime concrete ...	9,414	9,775	...	9,775	...	9,775	361	...		
		Coursed rubble masonry ...	4,079	5,217	...	5,217	...	5,217	1,138	...		
		Brick work in tunnel ...	9,470	9,491	...	9,491	...	9,491	21	...		
		Cement concrete blocks ...	3,563	5,183	...	5,183	...	5,183	1,620	...		
		Cut-stone work ...	577	483	...	483	...	483	...	94		
		Carried over ...	30,679	29,206	...	29,206	...	29,206	3,140	4,613		

RAMTEK RESERVOIR

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
Head Works ...	C.—Masonry—(*Contd.*)	Brought over ...	30,679	29,206	...	29,206	...	29,206	3,140	4,613	State's Despatch No. 7-P. W., dated the 24th February 1911.	
		Cement plaster, 2" thick ...	2,157	1,397	...	1,397	...	1,397	...	760		
		Cement plaster, ½" thick ...	755	593	...	593	...	593	...	162		
		Foot-bridge ...	1,980	2,084	...	2,084	...	2,084	104	...		
		Platform ladder ...	1,075	1,090	...	1,090	...	1,090	15	...		
		Sluice gates ...	14,500	14,602	...	14,602	...	14,602	102	...		
		Sub-head below Rs. 500 ...	1,712	4,192	...	4,192	...	4,192	2,480	...		
		Contingencies ...	2,643	870	...	870	...	870	...	1,773		
		Work establishment ...	1,048	...	...	...	...	...	...	1,048		
		Total ...	56,549	54,034	...	54,034	...	54,034	5,841	8,356		
		Crest Waste-Weir.										
		Excavation of founds ..	1,051	6,049	...	6,049	19 6 3	6,049	4,998	...		
		Lime concrete ...	4,159	3,360	...	3,360	...	3,360	...	799		
		Cement concrete ...	1,069	1,949	...	1,949	...	1,949	880	...		
		Coursed rubble masonry ...	9,511	15,778	...	15,778	...	15,778	6,267	...		
		Cut-stone work ...	941	422	...	422	...	422	...	519		
		Cement pointing ...	565	1,170	...	1,170	...	1,170	605	...		
		Dry stone pitching ...	810	1,778	...	1,778	...	1,778	968	...		

Do. 2′ ...	10,322	10,477	...	10,477	...	10,477	155	..	Revised Estimate sanctioned in Secretary of
Excavation for pitching ...	816	809	...	809	...	809	...	1 625	
Contingencies ...	1,489	294	...	294	...	294	...	1,195	
Sub-head below Rs. 500 ..	550	5,976	...	5,976	...	5,976	5,426	...	
Fine recoveries ...	...	1,025	...	1,025	...	1,025	—1,025	...	
Total ...	31,283	45,419	...	45,419	19 6 3	45,419	18,274	4,138	
First Fall at Chainage 27·5 of Spill Channel.									
Excavation of founds ...	902	1,136	...	1,136	...	1,136	234	...	
Lime concrete ...	2,490	234	...	234	...	234	...	2,256	
Cement concrete ...	674	336	...	336	...	336	...	338	
Coursed rubble masonry ...	5,502	1,106	...	1,106	...	1,106	...	4,396	
Cut-stone work ...	860	303	...	303	...	303	...	557	
Pitching, 2′ thick ...	8,749	6,486	...	6,486	...	6,486	...	2,263	
Do. 1½′ thick ...	837	1,287	...	1,287	...	1,287	450	...	
Excavation for pitching ...	721	1,010	...	1,010	...	1,010	289	...	
Sub-head below Rs. 500 ...	1,355	369	...	369	...	369	...	986	
Contingencies ...	1,105	...	...	...	...	...	...	1,105	
Total ..	23,195	12,267	...	12,267	...	12,267	973	11,901	
Second Fall at Chainage 42·5 of Spill Channel.									
Excavation of founds ...	1,079	2,230	...	2,230	...	2,230	1,151	...	
Lime concrete ...	2,601	2,324	...	2,324	...	2,324	...	277	
Cement concrete ...	680	62	...	62	...	62	...	618	
Coursed rubble masonry ...	6,132	7,025	...	7,025	...	7,025	893	...	
Cut-stone work ...	730	243	...	243	...	243	...	487	
Pitching, 2′ thick ..	8,529	6,765	...	6,765	...	6,765	...	1,764	
Do. 1½′ thick ...	725	2,085	...	2,085	...	2,085	1,360	...	
Excavation for pitching ...	678	2,127	...	2,127	...	2,127	...	2,805	
Sub-head below Rs. 500 ..	1,174	4 388	...	4,388	...	4,388	3,214	...	
Contingencies ...	1,117	14	...	14	...	14	...	1,103	
Total ...	23,445	23,009	...	23,009	...	23,009	6,618	7,054	

RAMTEK RESERVOIR.

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	2	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Third Fall at Chainage 44·5 of Spill Channel.										
Head Works ...	C.—Masonry—(*Concld.*).	Excavation of founds ...	1,747	3,794	...	3,794	...	3,794	2,047	...	State's Despatch No. 7-P. W., dated the 24th February 1911.	
		Lime concrete ...	2,088	1,053	...	1,053	...	1,053	...	1,035		
		Cement concrete ...	601	...	...	...	...	...	...	601		
		Coursed rubble masonry ...	5,810	4,843	...	4,843	...	4,843	...	967		
		Cut-stone work ...	837	896	...	896	...	896	59	...		
		Dry stone pitching, 1½′ thick ...	1,187	1,531	...	1,531	...	1,531	344	...		
		Do. 2′ thick ...	7,126	6,957	...	6,957	...	6,957	...	169		
		Sub-head below Rs. 500 ...	1,241	5,204	...	5,204	...	5,204	3,963	...		
		Contingencies ...	1,032	26	...	26	...	26	...	1,006		
		Total ...	21,669	24,304	...	24 304	...	24,304	6,413	3,778		
		Work establishment ...	1,548	2,541	...	2,541	...	2,541	993	...		
		Proposed Masonry Dam.										
		Excavation of founds in dry earth and sand.	1,051	1,110	...	1,110	...	1,110	59	...		
		Excavation of founds in dry earth and boulders.	559	559	...	559	...	559	...	...		

		Do. in wet earth and boulders.	1,885	2,949	...	2,949	...	2,949	1,064	...	Revised Estimate sanctioned in Secretary of
		Do. in dry rock ...	1,809	1,809	...	1,809	...	1,809	...	...	
		Do. in wet rock ...	6,768	7,018	...	7,018	...	7,018	250	...	
		Pumping on wet excavation ...	22,844	22,944	...	22,944	...	22,944	100	...	
		Removing spoil from site ...	4,060	3,686	...	3,686	...	3,686	...	374	
		Removing stone from site ...	621	31	...	31	...	31	...	590	
		Lime sheds, &c. ...	1,500	2,139	...	2,139	...	2,139	639	...	
		Sub-heads below Rs. 500 ...	974	2,600	...	2,600	...	2,600	1,626	...	
		Contingencies ...	2,104	183	...	183	...	183	...	1,921	
		Work establishment ...	494	1,092	...	1,092	...	1,092	598	...	
		Excavation of sand below nalla bed ...	...	1,646	...	1,646	...	1,646	1,646	...	
		Total ...	44,669	47,766	...	47,765	...	47,766	5,982	2,885	
		Total for C.—Masonry ..	2,02,358	2,09,340	...	2,09,340	19 6 3	2,09,340	45,094	38,112	
		Temporary Buildings.									
Head Works ...	K.—Buildings ...	Assistant Engineer's bungalow ...	3,723	4,717	...	4,717	...	4,717	994	...	
		Sub-Divisional Office ..	1,478	1,701	...	1 701	...	1,701	223	...	
		Store shed ...	298	301	...	301	...	301	3	...	
		Subordinates' quarters at Khindsi ...	1,018	1,018	...	1,018	...	1,018	...	...	
		Do. at Punchalla ...	473	485	..	485	...	485	12	...	
		Hospital quarters ...	903	903	...	903	...	903	...	...	
		Inspection hut .	1,722	1,711	...	1,711	...	1,711	...	11	
		Contingencies ...	...	73	...	73	...	73	73	...	
		Permanent Buildings.									
		Inspection bungalow ...	9,932	...	13,882	13,882	8,169 0 0	13,882	3,950	...	
		Crockery and furniture ...	1,500	2,363	...	2,363	...	2,363	863	...	
		Road from main dam to bungalow ...	1,250	2,360	...	2,360	...	2,360	1,110	...	
		Work establishment ...	428	14	...	14	...	14	...	414	
		Total for K.—Buildings ...	22,725	15,646	13,882	29,528	8,169 0 0	29,528	7,228	425	

RAMTEK RESERVOIR.

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5.	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Flank Dam.										
Head Works ...	L.—Earthwork ...	Benching ...	2,420	2,256	...	2,256	...	2,256	...	164	State's Despatch No. 7-P. W., dated the 24th February 1911.	
		Excavation of puddle trench ...	12,806	7,156	...	7,156	...	7,156	...	5,650		
		Puddle filling ...	22,385	23,090	...	23,090	...	23,090	705	...		
		Earthwork in bund spill channel ...	35,801	3,676	...	3,676	...	3,676	...	32,125		
		Earthwork in bund ...	1,61,866	1,61,813	...	1,61,813	...	1,61,813	...	53		
		Muram under pitching ...	4,989	1,590	...	1,590	...	1,590	...	3,399		
		Water rolling on puddle trench ...	2,519	2,700	...	2,700	...	2,700	181	...		
		Earthwork in berm ...	3,037	3,997	...	3,997	...	3,997	960	...		
		Earth from waste weir ...	...	34,528	...	34,528	...	34,528	34,528	...		
		Sub-heads below Rs. 500 ...	671	1,582	...	1,582	...	1,582	911	...		
		Contingencies ...	12,325	2,845	...	2,845	...	2,845	...	9,480		
		Work establishment ...	2,443	2,679	...	2,679	...	2,679	236	...		
		Total ...	2,61,262	2,47,912	...	2,47,912	...	2,47,912	37,521	50,871		

Main Dam.								
Site clearance benching in sand and earth above pumping level.	4,721	13,797	...	13,797	...	13,797	9,076	...
Site clearance benching in boulders above pumping level.	534	11,798	...	11,798	...	11,798	...	12,332
Site clearance benching in rock above pumping level.	999	3,399	...	3,399	...	3,399	2,400	...
Site clearance benching in sand below pumping level.	6,532	11,406	...	11,406	...	11,406	4,874	...
Site clearance benching in boulders below pumping level.	9,108	11,033	...	11,033	...	11,033	1,925	...
Excavation of puddle trench in sand and earth above pumping level.	553	994	...	994	...	994	441	...
Excavation of puddle trench in dry rock above pumping level.	5,137	5,470	...	5,470	...	5,470	333	...
Excavation of puddle trench in wet rock below pumping level.	7,203	7,449	...	7,449	...	7,449	246	...
Excavation of puddle trench in sand below pumping level.	674	...	...	...	...	...	...	674
Pumping on wet excavation ...	5,981	992	...	992	...	992	...	4,989
Do. do. ...	95,873	1,01,920	...	1,01,920	...	1,01,920	6,047	...
Shearing sides of excavation ...	3,000	3,000	...	3,000	...	3,000	...	...
Puddle filling ...	22,864	22,442	...	22,442	...	22,442	...	422
Earthwork in main dam ...	2,40,380	2,39,884	...	2,39,884	...	2,39,884	...	496
Muram facing on up stream face ...	1,645	...	...	...	...	...	...	1,645
Sand filling at down stream ...	1,731	2,257	...	2,257	...	2,257	526	...
Turfing down stream face of bund ...	1,785	24	...	24	...	24	...	1,761
Sub-head below Rs. 500 ...	948	1,103	...	1,103	...	1,103	155	...
Work establishment ...	3,834	4,339	...	4,339	...	4,339	505	...
Contingencies ...	20,483	2,672	...	2,672	...	2,672	...	17,811
Total ...	4,33,985	4,20,383	...	4,20,383	...	4,20,383	26,528	40,130

Revised Estimate sanctioned in Secretary of

RAMTEK RESERVOIR.

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Waste Weir Spill Channel.										
Head Works ...	L.—Earthwork—(*Concld.*)	Pitching ...	...	17,254	...	17,254	...	17,254	17,254	...	State's Despatch No. 7-P. W., dated the 24th February 1911.	
		Making matams of flank dam ...	...	5,278	...	5,278	...	5,278	5,278	...		
		Excavation in earth and soft mocrum...	12,847	20,882	...	20,882	...	20,882	8,035	...		
		Excavation in moorum and small boulders.	12,408	10,216	...	10,216	...	10,216	...	2,192		
		Afflux bund ...	763	383	...	383	...	383	...	380		
		Work establishment ...	...	114	...	114	...	114	114	...		
		Contingencies ...	1,301	383	...	383	...	383	...	918		
		Total ...	27 319	54,510	...	54,510	...	54,510	30,681	3,490		
		Arrears of wages ...	...	3	...	3	...	3	3	...		
		Total for L.—Earthwork ...	7,22,566	7,22,802	...	7,22,802	...	7,22,802	94,727	94,491		
									236			
		Main Dam.										
Head Works ...	O.—Miscellaneous ...	Pitching on up stream face of bund ...	18,085	18,228	...	18,228	...	18,228	143	...		
		Road to Head Works ...	1,000	647	...	647	...	647	...	353		
		Hospital and conservancy ...	7,912	5,307	...	5,307	...	5,307	...	605		
		Third Class road from Amballa to Head work.	2,000	...	...	...	...	...	...	22,000		

		Approach road to camp	...	350	1,220	...	1,220	...	1,220	870	...	Revised Estimate sanctioned in Secretary of
		Sub-Divisional Officer's bungalow	...	...	26	...	26	...	26	26	...	
		Gauging	...	...	546	...	546	...	546	546	...	
		Contingencies	...	1,467	1,453	...	1,453	...	1,453	...	14	
		Work establishment	..	456	...	1,711	1,711	14	1,711	1,255	...	
		Total	...	31,270	27,427	1,711	29,138	14	29,138	2,840	4,972	
		Flank Dam.										
		Dry stone pitching, 1′ thick	...	86,583	71,868	...	71,868	...	71,868	...	14,715	
		Contingencies	...	4,329	2,412	...	2,412	...	2,412	...	1,917	
		Work establishment	...	570	250	...	250	...	250	...	320	
		Total	...	91,482	74,530	...	74,530	...	74,530	...	16,952	
		Total for O.—Miscellaneous	..	1,22,752	1,01,957	1,711	1,03,668	14	1,03,668	2,840	21,924	
Head Works ...	P.—Maintenance ...	Main dam	...	500	883	...	883	...	883	383	...	
		Flank dam	..	500	104	...	104	...	104	...	396	
		Repairs to buildings, 1908-09	...	511	169	...	169	...	169	...	342	
		Do. 1909-10	...	417	490	...	490	...	490	73	..	
		Do. 1910-11-12	...	900	835	...	835	...	835	...	65	
		Work establishment	...	...	1,087	...	1,087	...	1,087	1,087	...	
		Total P.—Maintenance	...	2,828	3,568	...	3,568	...	3,568	1,543	803	
		Unforeseen items	...	20,000	...	...	...	...	...	...	20,000	
		Total Head Works	...	12,85,784	10,54,731	1,96,313	12,51,044	8,570 12 9	12,51,044	1,52,040	1,86,780	
										34,740		
III-A.—Dhanla Distributary.	B.—Land ...	Permanent land	...	18,108	...	17,537	17,537	...	17,537	...	571	
		Temporary land	...	700	...	394	394	147 12 10	394	...	306	
		Dagbailing	...	2,871	2,119	...	2,119	974 8 6	2,119	...	752	
		Stones	...	5,516	...	...	...	...	...	...	5,516	
		Contingencies	...	1,359	...	...	...	...	...	...	1,359	
		Total	..	28,554	2,119	17,931	20,050	1,122 5 4	20,050	...	8,504	

RAMTEK RESERVOIR.

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Escape Channel Falls.										
III-A.—Dhanla Distributary.	C.—Masonry ...	Concrete lime ...	761	1	...	1	...	1	...	760	State's Despatch No. 7-P. W., dated the 24th February 1911.	
		Coursed rubble masonry ...	3,305	10,845	...	10,845	...	10,845	7,540	...		
		Bailing water ...	750	172	...	172	...	172	...	578		
		Sub-heads below Rs. 500 ...	1,877	...	1,148	1,148	...	1,148	...	729		
		Coursed rubble masonry ...	952	...	...	...	...	...	...	952		
		Woodwork ...	819	...	...	...	...	...	...	819		
		Sub-heads below Rs. 500 ...	1,064	...	721	721	408 7 10	721	...	343		
		Contingencies ...	477	...	299	299	...	299	...	178		
		Total ...	10,005	11,018	2,168	13,186	408 7 10	13,186	7,540	4,359		
		Drainage Crossing at Chainage 950.										
		Coursed rubble masonry ...	726	1,568	...	1,568	...	1,568	842	...		
		Sub-heads below Rs. 500 ...	677	411	...	411	...	411	...	266		
		Contingencies ...	70	...	...	...	...	...	...	70		
		Total ...	1,473	1,979	...	1,979	...	1,979	842	336		

Drainage Crossing at Chainage 2,100.									
Concrete ...	1,732	...	...	...	...	...	...	1,732	Revised Estimate sanctioned in Secretary of
Coursed rubble masonry ...	3,234	7,838	...	7,838	...	7,838	4,604	...	
Arch work ...	1,477	...	..	...	..	...	...	1 477	
Sub-heads below Rs. 500 ...	1,666	—2,296	...	—2,296	...	—2,296	...	3,962	
Contingencies ...	405	..	...	...	...	...	...	405	
Total ..	8,514	5,542	...	5,542	...	5,542	4,604	7,576	
Road Bridge and Regulator at Chainage 2,837.									
Coursed rubble masonry ...	1,065	...	...	...	..	...	...	1,065	
Sub-head below Rs. 500 ...	1,280	3,054	...	3,054	...	3,054	1,774	...	
Contingencies ...	117	...	...	...	...	...	...	117	
Total ...	2,462	3,054	...	3,054	...	3,054	1,774	1,182	
Drainage Crossing at Chainage 3 450.									
Coursed rubble masonry ...	1,320	2,322	...	2,322	...	2,322	1,002	...	
Sub-head below Rs. 500 ...	1,212	111	...	111	...	111	...	1,101	
Contingencies ...	127	...	...	...	...	...	...	127	
Total ...	2,659	2,433	...	2,433	...	2,433	1,002	1,228	
Road Bridge at Chainage 5,500 & 5,000									
Nawargaon minor head at chainage 5,000.	330	1,851	...	1,851	...	1,851	1,521	...	
Coursed rubble masonry ...	922	15	...	15	...	15	...	907	
Sub-head below Rs. 500 ...	1,230	376	...	376	...	376	...	854	
Contingencies ...	108	...	...	...	...	...	...	108	
Total ...	2,590	2,242	...	2,242	...	2,242	1,521	1,869	
Drainage Crossing at Chainage 6,950.									
Concrete ...	1,806	12	...	12	...	12	...	1,794	
Brick masonry ..	4,188	7,580	...	7,580	...	7,580	3,392	...	
Arch work ...	775	...	...	...	...	...	...	775	
Sub-heads below Rs. 500 ...	870	...	325	325	...	325	...	545	
Contingencies ...	382	5	...	5	...	5	...	377	
Total ...	8,021	7,597	325	7,922	...	7,922	3,392	3,491	

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
A.—Dhanla Distributary.	C.—Masonry.—(*Contd.*)	Nagardhan minor head chainage 7,600.	852	...	12	12	...	12	...	840	State's Despatch No. 7-P. W., dated the 24th February 1911.	
		Establishment ...	768	32	..	32	...	32	...	736		
		Total ...	37,344	33,897	2,505	36,402	...	36,402	20,675	21,617		
		Main Channel.										
		Drainage syphon, 9,590 ...	3,168	2,290	...	2,290	...	2,290	..	878		
		Road bridge and regulator, chainage 10,400.	2,497	2,867	...	2,867	...	2,867	370	...		
		A-2 Minor head at chainage 11,000 ..	524	228	...	228	...	228	...	296		
		Drainage culvert at chainage 12,420 ..	2,997	3,163	...	3,163	...	3,163	166	...		
		A-3 Minor head at chainage 14,300 ...	398	98	...	98	...	98	...	300		
		A-4 Minor head at chainage 15,900 ...	416	604	...	604	...	604	188	...		
		Road bridge at chainage 16,260 ...	1,773	1,568	...	1,568	...	1,568	...	205		
		Drainage syphon at chainage 17,000 ...	3,359	2,999	...	2,999	...	2,999	...	360		
		A-5 Minor head at chainage 17,600 ...	389	260	...	260	...	260	...	129		
		C. Distributary Head Road at chainage 19,600.	7,523	4,918	...	4,918	...	4,918	...	2,605		
		3′ fall and syphon at chainage 20,350 ...	3,500	4,809	...	4,809	...	4,809	1,309	...		

Road bridge at chainage 22,200 ...	1,997	252	...	252	...	252	...	1,745	Revised Estimate sanctioned in Secretary of
3′ 5″ fall at chainage 23,600 ...	2,102	3,143	...	3,143	..	3,143	1,041	...	
3′ 0″ fall at chainage 25,300 ...	2,011	2,422	...	2,422	...	2,422	411	...	
A-6 Minor head at chainage 26,200 ...	818	1,102	...	1,102	...	1,102	284	...	
3′ fall regulator road bridge at chainage 26,400.	3,358	3,587	...	3,587	...	3,587	229	...	
3′ 5″ fall at chainage 27,600 ...	1,849	2,074	...	2,074	...	2,074	225	...	
2′ 5″ fall at chainage 28,500 ...	1,842	2,055	...	2,055	...	2,055	213	...	
3′ fall and road bridge at chainage 29,500.	2,366	3,521	...	3,521	...	3,521	1,155	...	
A-7 Minor head at chainage 30,100 ...	349	572	...	572	...	572	223	...	
3′ 0″ fall and regulator at chainage 30,450.	2,028	2,567	...	2,567	...	2,567	539	...	
3′ fall at chainage 30,900 ...	2,072	2,353	...	2,353	...	2,353	281	...	
3′ 5′ fall at chainage 31,400 ...	2,550	2,400	...	2,400	...	2,400	...	150	
3′ 5′ fall road bridge at chainage 33,200	2,750	4,333	...	4,333	...	4,333	1,583	...	
A-8 Minor head at chainage 34,855 ...	543	457	...	457	...	457	...	86	
4′ fall and regulator at 35,000 ...	2,750	3,185	...	3,185	...	3,185	435	...	
A-9 Minor head at chainage 39,000 ...	451	172	...	172	...	172	...	279	
2′ fall and road bridges at chainage 40,500.	2,750	3,298	...	3,298	...	3,298	548	...	
A-10 Minor head at chainage 42,150 ...	450	433	...	433	...	433	...	17	
Drainage syphon at chainage 43,121 ...	1,680	2,019	...	2,019	...	2,019	339	...	
Road bridges and regulator at chainage 44,600.	1,930	2,147	...	2,147	...	2,147	217	...	
A-11 Minor head at chainage 45,100 ...	418	508	...	508	...	508	90	...	
A-12 do. do. 47,000 ...	468	556	...	556	...	556	88	...	
A-13 do. do. 44,400 ...	412	488	...	488	...	488	76	...	
2′ fall regulator at chainage 48,100 ...	2,205	2,562	...	2,562	...	2,562	357	...	
A-14 Minor head at chainage 49,200 ...	395	213	...	213	...	213	...	182	
A-15 do. do. 52,040 ...	802	258	...	258	...	258	...	544	
Road bridge and regulator at chainage 52,800.	2,198	2,595	...	2,595	...	2,595	397	...	
Crried over ...	70,088	73,076	...	73,076	...	73,076	10,764	7,776	

STATEMENT A—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctoned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.	State's Despatch No. 7-P. W., dated the 24th February 1911.	
		Brought forward ...	70,088	73,076	...	73,076	...	73,076	10,764	7,776		
		Main Channel.—(Contd.)										
A.—Dhanla Distributary.	C.—Masonry.—(*Contd.*)	Road bridge and regulator at chainage 56,200.	1,850	2,229	...	2,229	...	2,229	379	...		
		Syphon at chainage 56,400 ...	2,337	2,529	...	2,529	...	2,529	192	...		
		A-16 Minor head at chainage 58,100 ...	461	666	...	666	...	666	205	...		
		Syphon at chainage 58,850 ...	1,650	1,736	...	1,736	...	1,736	86	...		
		A-17 Minor head at chainage 59,890 ...	1,531	1,456	...	1,456	...	1,456	...	75		
		2·25′ fall regulator at chainage 59,900.	2,500	3,192	...	3,192	...	3,192	692	...		
		Drainage culvert at chainage 61,200 ..	2,527	2,539	...	2,539	...	2,539	12	...		
		Road bridge at chainage 66,500 ...	1,650	2,357	...	2,357	...	2,357	707	...		
		A-18 Minor head at chainage 66,518 ...	418	564	...	564	...	564	146	...		
		Road bridge at chainage 68,850 ...	1,621	2,869	...	2,869	...	2,869	1,248	...		
		A-19 Minor head at chainage 72,300 ...	577	2,064	...	2,064	...	2,064	1,487	...		
		Foot bridge and regulator at chainage 72,300.	918	1,043	...	1,043	...	1,043	125	...		
		Syphon under Bengal-Nagpur Railway.	6,000	9,770	...	9,770	...	9,770	3,770	...		
		A-20 Minor head at chainage 73,152 ...	435	1,076	...	1,076	...	1,076	641	...		
		Drainage distributary head bridge at chainage 75,500.	5,654	5,167	...	5,167	...	5,167	...	487		

Drainage syphon at chainage 76,300 ...	1,050	1,427	...	1,427	...	1,427	377	...	Revised Estimate sanctioned in Secretary of
Minor head at chainage 76,775 ...	400	496	...	496	...	496	96	...	
3·2′ fall and regulator at chainage 77,200.	1,038	997	...	997	..	997	...	41	
4·5′ fall at chainage 77,600 ...	859	994	...	994	...	994	135	...	
A-22 Minor head at chainage 82 500 ...	350	102	...	102	...	102	...	248	
4′ fall at chainage 78,300 ...	803	934	...	934	...	934	131	...	
A-23 Minor head at chainage. 82,500	305	200	...	200	...	200	...	105	
5′ Fall at chainage ... 79,700	949	1,280	...	1,280	...	1,280	331	...	
Road Bridge and Regulator. 82,150	904	892	...	892	...	892	...	12	
4·5′ Fall ... 82,900	968	1,100	...	1,100	...	1,100	132	...	
4′ do. ... 84,300	906	1,089	...	1,089	...	1,089	183	...	
A-24 Minor head ... 85,100	550	357	...	357	...	357	7	...	
4′ Fall ... 85,300	903	1,328	...	1,328	...	1,328	425	...	
4·5′ Fall and Regulator ... 86,300	1,177	1,324	...	1,324	...	1,324	147	...	
Road Bridge ... 87,650	790	864	...	864	...	864	74	...	
A-25 Minor head ... 90,175	356	375	...	375	...	375	19	...	
Syphon at chainage ... 90,800	553	1,930	...	1,930	...	1,930	1,377	...	
Do. do. ... 92,600	875	1,274	...	1,274	...	1,274	399	...	
Do. do. ... 93,500	540	1,020	...	1,020	...	1,020	480	...	
A-26 Minor head ... 94,675	329	541	...	541	...	541	212	...	
A-27 Do. ... 94,950	306	515	...	515	...	515	209	...	
4·5′ Fall and Regulator ... 95,200	1,045	1,108	...	1,108	...	1,108	63	...	
4·5′ Do. Road bridge ... 95,800	1,417	1,145	...	1,145	...	1,145	...	272	
A-28 Minor head at chainage. 98,300	529	266	...	266	...	266	...	263	
Road Bridge and Regulator... 99,660	655	679	...	679	...	679	24	...	
A-29 Minor head at chainage ... 101,000	266	514	...	514	...	514	248	...	
A-30 Do. do. ... 101,000	270	188	...	188	...	188	...	82	
Carried over ...	1,19,110	1,35,272	...	1,35,272	...	1,35,272	25,523	9,361	

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actul further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	14
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Brought forward ...	1,19,110	1,35,272	...	1,35,272	...	1,35,272	25,523	9,361		
		Main Channel.—(Concld.)										
A.—Dhanla Distributary.	C.—Masonry.—(*Concld.*)	5′ Fall and Regulator ... 101,200	1,257	1,023	...	1,023	...	1,023	...	234	Despatch No. 7-P. W., dated the 24th February 1911.	
		4′ Do. Road Bridge at chainage. 101,600	220	1,013	...	1,013	...	1,013	793	...		
		A-31 Minor head ... 105,000	1,487	397	...	397	...	397	...	1,090		
		6′ Fall and Regulator ... 105,500	1,121	996	...	996	...	996	...	125		
		Road bridge at chainage ... 107,000	476	511	...	511	...	511	35	...		
		A-32 Minor head do. ... 107,300	250	180	...	180	...	180	...	70		
		Road bridge and Regulator. 110,360	541	551	...	551	...	551	10	...		
		A-33 Minor head do. ... 111,050	268	374	...	374	...	374	106	...		
		2′ Fall at chainage ... 111,500	348	318	...	318	...	318	...	30		
		Road Bridge at chainage ... 124,300	415	784	...	784	...	784	339	...		
		A-34 Minor head at chainage 114,500	216	109	...	109	...	109	...	107		
		A-35 Minor head at chainage., 116,600	224	456	...	456	...	456	232	...		

4′ Fall and Regulator at chainage.	116,900	530	575	...	575	...	575	45	...	Revised Estimate sanctioned in Secretary of State's
A-36 Minor head at chainage	116,600	230	502	...	502	...	502	272	...	
4′ Fall at chainage ...	117,400	450	...	203	203	...	203	...	247	
Road Bridge and Regulator at chainage.	120,300	550	503	...	503	...	503	...	47	
Syphon	121,650	732	1,333	...	1,333	...	1,333	601	...	
Skew Road Bridge at chainage	121,810	828	2,000	...	2,000	...	2,000	1,172	...	
A-37 Minor head at chainage.	122,920	251	215	...	215	...	215	...	36	
Syphon at chainage ...	123,650	787	688	...	688	...	688	...	99	
A-38 Minor head at chainage..	125,100	220	441	...	441	...	441	221	...	
A-39 Minor head at chainage..	125,500	243	426	...	426	...	426	183	...	
3′ Fall Road Bridge and Regulator at chainage ...	125,500	549	1,369	...	1,369	...	1,369	820	...	
3′ Fall at chainage ...	126,300	350	295	...	295	...	295	...	55	
Road Bridge at chainage ...	127,900	338	354	...	354	...	354	16	...	
1—5′ Fall at chainage ...	128,500	239	250	...	250	...	250	11	...	
Supplying shutter ...		...	1,417	...	1,417	...	1,417	1,417	...	
A-40 Minor head at chainage.	129,500	243	169	...	169	...	169	...	74	
Stop Dam at chainage ...	130,500	137	173	...	173	...	173	36	...	
Syphon at chainage ...	115,300	...	840	...	840	...	840	840	...	
Escape		7,500	130	..	130	...	130	...	7,370	
Total of C. Masonry ...		1,40,140	1,53,664	203	1,53,867	...	1,53,867	32,672	18,945	
Minors.										
A-1 Nawargaon Minor ...		...	325	...	325	...	325	325	...	
A-2 Daiwara do. ...		500	278	...	278	...	278	...	222	
A-3 Minsi do. ...		500	554	...	554	...	554	54	...	
A-4 Ghatti do. ...		2,000	2,353	...	2,353	...	2,353	353	...	
Carried over ...		3,000	3,510	...	3,510	...	3,510	732	222	

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Brought forward ..	3,000	3,510	...	3,510	...	3,510	732	222		
		Minors.—(Concld.)										
A.—Dhanla Distributary.	C.—Masonry.—(*Concld.*)	A-5 Hattari Minor ...	1,000	951	...	951	...	951	...	49	Despatch No. 7-P. 17, dated the 24th February 1911.	
		A-6 Nairla do. ...	6,760	6,251	...	6,251	...	6,251	...	509		
		A-7 Dudhala do. ..	1,120	761	...	761	...	761	...	359		
		A-8 Bharsu do. ...	760	718	...	718	...	718	...	42		
		A-9 Thuman do. ...	400	...	...	...	...	...	...	400		
		A-10 Haigna do. ...	1,470	1,166	...	1,166	...	1,166	...	304		
		A-11 Khaperkheda Minor No. I ...	2,040	2,156	...	2,156	...	2,156	116	...		
		A-12 Do. do. No. II ...	...	123	...	123	...	123	123	...		
		A-13 Pardi do. No. I ...	600	218	...	218	...	218	...	382		
		A-14 Nimkheda do. ...	...	155	..	155	...	155	155	...		
		A-15 Tharsa do. ...	7,500	4,560	...	4,560	...	4,560	...	2,940		
		A-16 Pardi do. No. II ...	660	664	...	664	...	664	4	...		
		A-17 Virsu do. ...	14,650	15,368	...	15,368	...	15,368	718	...		

A-18 Rajoli	do.		..	600	684	...	684	...	684	84	...
A-19 Dharmapuri	do.		...	4,625	3,408	...	3,408	...	3,408	...	1,217
A-20 Reorala	do.	No. I	..	2,290	1,799	...	1,799	...	1,799	...	491
A-21 Do.	do.	No. II	...	410	144	...	144	...	144	...	266
A-22 Do.	do.	No. III	...	410	158	...	158	...	158	...	252
A-23 Charbha	do.		...	500	154	...	154	...	154	...	346
A-24 Pipri	do.	No. I	...	800	862	...	862	...	862	62	...
A-25 Vankepar	do.		...	470	695	...	695	...	695	225	...
A-26 Dhanla	do.	No. I	...	1,060	395	...	395	...	395	...	665
A-27 Pipri	do.	No. II	...	760	730	...	730	...	730	...	30
A-28 Dhanla	do.	No. II	...	1,500	1,383	...	1,383	...	1,383	...	117
A-29 Do.	do.	No. III	..	385	232	...	232	...	232	...	153
A-30 Do.	do.	No. IV	...	400	30	...	30	...	30	...	370
A-31 Chickli	do.	No. I	...	400	117	...	117	...	117	...	283
A-32 Checkala	do.		..	400	...	...	...	...	...	...	400
A-33 Mahadola Minor			...	1,500	950	...	950	...	950	...	550
A-34 Chickli	Minor No. II		...	800	287	...	287	...	287	...	513
A-35 Kharbi	do.		...	1,255	1,692	...	1,692	...	1,692	437	...
A-36 Niharwani	do.		..	2,045	1,787	...	1,787	...	1,787	...	258
A-37 Thana	do.		...	750	384	...	384	...	384	...	366
A-38 Kharari	do.		...	800	547	...	547	...	517	...	253
A-39 Palsora	do.		...	750	179	...	179	...	179	...	571
A-40 Nandora	do.		...	1,000	206	...	206	...	206	...	794
Contingencies			...	...	1,615	...	1,615	...	1,615	1,615	...
Works Establishment			..	2,500	6,702	...	6,702	...	6,702	4,202	...
Total Minors			...	66,370	61,741	...	61,741	...	61,741	8,473	13,102
Irrigation Syphon under Bengal-Nagpur Railway.				...	9,905	...	9,905	...	9,905	9,905	...
Total for C.—Masonry			..	2,43,854	2,59,207	2,708	2,61,915	408 7 10	2,61,915	71,725	53,664
										18,061	

Revised Estimate sanctioned in Secretary of State's

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Main Channel.										
A.—Dhanla Distributary.	L.—Earthwork ...	Earthwork in channel Main ...	1,00,073	1,32,998	...	1,32,998	...	1,32,998	32,925	...	Despatch No. 7-P. W., dated the 24th February 1911.	
		Do. do. minors ...	5,811	28,598	...	28,598	...	28,598	22,787	...		
		Hard Moorum ...	704	1,612	...	1,612	...	1,612	908	...		
		Moorum and small boulders ...	2,509	—265	...	—265	...	—265	...	2,774		
		Do. large do. ...	3,295	—162	...	—162	...	—162	...	3,457		
		Very large boulders ...	4,775	286	...	286	...	286	...	4,489		
		Blasting rock ...	1,131	6	...	6	...	6	...	1,125		
		Rolling of earthwork ...	1,795	49	...	49	...	49	...	1,746		
		Catch-water drain ...	1,134	3,751	...	3,751	...	3,751	2,617	...		
		Earthwork in Bank at sluice exit ...	979	2,383	...	2,383	...	2,383	1,404	...		
		Temporary Escape Channel ...	806	458	...	458	...	458	...	348		
		Escape Channel at 75,000 ...	965	651	...	651	...	651	...	314		
		Sub-head below Rs. 500 ...	641	201	...	201	...	201	...	440		
		Establishment Charges ...	2,965	2,999	...	2,999	...	2,999	34	...		
		Contingencies ...	6,379	909	...	909	...	909	...	5,470		
		Total ..	1,33,962	1,74,474	...	1,74,474	...	1,74,474	60,675	20,163		

	Minors.									
	A-1 Nawargaon Minor	...	101	...	...	...	...	...	...	101
	A-2 Dawniwada do.	...	360	...	...	...	...	...	...	360
	A-3 Minsi do.	...	300	...	...	...	...	...	...	300
	A-4 Ghoti do.	...	870	27	...	27	...	27	...	843
	Sub-head below Rs 500	..	685	71	...	71	...	71	...	614
	A-6 Nairla Minor	...	2,248	360	...	360	...	360	...	1,888
	A-7 Dhanla do.	...	541	20	...	20	...	20	...	521
	A-8 Bharsi do.	...	315	...	...	...	...	...	...	315
	A-9 Thooman do.	..	300	...	...	...	...	...	...	300
	A-10 Hingna do.	...	363	2	...	2	...	2	...	361
	A-11 Khaperkheda do.	...	530	...	...	...	...	...	...	530
	A-12 Do. do. No. II	...	180	...	...	...	...	...	...	180
	A-13 Pardi do. No. I	..	290	...	...	...	...	...	...	290
	A-14 Nimkhera do.	..	150	...	...	...	...	...	...	150
	A-15 Tharsa do.	..	5,270	517	...	517	...	517	...	4,753
	A-16 Pardi do. No. II	...	234	...	...	...	...	...	...	234
	A-17 Virsu do.	...	8,143	136	...	136	...	136	...	8,007
	A-18 Rajoli do.	...	264	...	...	...	...	...	...	264
	A-19 Dharma Pari do.	...	2,282	...	...	...	...	...	...	2,282
	A-20 Reorala do. No. I	...	1,821	...	...	...	...	...	...	1,821
	A-21 Do. do. No. II	...	215	...	...	...	...	...	...	215
	A-22 Do. do. No. III	...	143	...	...	...	...	...	...	143
	A-23 Charbha do.	...	115	27	...	27	...	27	...	88
	A-24 Pipru do. No. I	...	364	6	...	6	...	6	...	358
	A-25 Vangipar do.	...	243	8	...	8	...	8	...	235
	A-26 Pipri do. No. II	...	223	...	...	...	...	...	...	223
	A-27 Dhanla do. No. I	...	433	24	...	24	...	24	...	409
	Carried over	...	26,983	1,198	...	1,198	...	1,198	...	25,785

Revised Estimate sanctioned in Secretary of State's

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914. On completed works.	Expenditure to end of February 1914. On works in progress.	Expenditure to end of February 1914. Total.	Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State. More.	Difference between total outlay and the amount sanctioned by the Secretary of State. Less.	Authority for sanctioning the estimate.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Brought forward ...	26,983	1,198	...	1,198	...	1,198	...	25,785		
		Minors.—(Contd.)										
A.—Dhanla Distributary.	L.—Earthwork.—(*Concld.*)	A-28 Dhanla Minor No. II ...	825	11	...	11	...	11	...	814	Despatch No. 7-P. W., dated the 24th February 1911.	
		A-29 Do. do. No. III ...	90	2	...	2	...	2	...	88		
		A-30 Do. do. No. IV ...	60	25	...	25	...	25	...	35		
		A-31 Chickli do. No. I ..	151	56	...	56	...	56	...	95		
		A-32 Chickoli do. ...	60	84	...	84	...	84	24	...		
		A-33 Mahadola do. ...	378	154	...	154	...	154	...	224		
		A-34 Chickli do. No. II ...	180	4	...	4	...	4	...	176		
		A-35 Kharbi do. ...	450	17	...	17	...	17	...	433		
		A-36 Nimkhera do. ...	630	63	...	63	...	63	...	567		
		A-37 Tharsa do. ...	150	...	...	...	...	...	...	150		
		A-38 Kharari do. ...	382	29	...	29	...	29	...	353		
		A-39 Palsori do. ...	178	106	...	106	...	106	...	72		
		A-40 Nandhara do. ...	600	6	...	6	...	6	...	594		
		Contingencies	1,556	27	...	27	...	27	...	1,529		
		Total ...	32,673	1,782	...	1,782	...	1,782	24	30,915		

	Approach Road to Railway Station	...	138	...	138	...	138	138	...	Revised Estimate sanctioned in Secretary of State's
	Repairing service road ..	...	132	...	132	...	132	132	...	
	Total for L.—Earthwork ...	1,66,635	1,76,526	...	1,76,526	...	1,76,526	60,969	51,078	
								9,891		
O.—Miscellaneous ...	Dry stone pitching 2′ thick ...	11,012	4,378	...	4,378	...	4,378	...	6,634	
	Making approach road to Reorala village.	...	100	...	100	...	100	100	...	
	Sub-head below Rs. 500 ...	...	1,199	...	1,199	...	1,199	1,199	...	
	Work establishment ...	...	18	...	18	...	18	18	...	
	Contingencies ...	551	...	...	...	...	...	...	551	
	Total for O.—Miscellaneous ...	11,563	5,695	...	5,695	...	5,695	1,317	7,185	
								5,868		
P.—Maintenance ...	Silt clearance ...	3,000	8,141	...	8,141	...	8,141	5,141	...	
	Repairing to ruts in banks ...	1,000	19,270	...	19,270	...	19,270	18,270	...	
	Jungle cutting ...	500	340	...	340	...	340	...	160	
	Repairs to catch-water drain ..	500	78	...	78	...	78	...	422	
	Contingencies ...	250	8	...	8	...	8	...	224	
	Maintenance from chainage 0 to 8,000.	2,279	—2,282	...	—2,282	...	—2,282	...	4,561	
	Work Establishment ...	...	983	...	983	..	983	983	...	
	Total for P.—Maintenance ...	7,529	26,538	...	26,538	...	26,538	24,394	5,385	
								19,009		
	Total of A.—Dhanla Distributary ...	4,58,135	4,70,085	20,639	4,90,724	1,530 13 2	4,90,724	1,58,405	1,25,816	
								32,589		

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
			...	...	...	...	...	...	...	...		
B.—Nagardhan Distributary.	A.—Preliminary ...	Preliminary Expenses ...	...	7	...	7	...	7	7	...	State's Despatch No. 7-P. W., dated the 24th February 1911.	
	B.—Land ...	Land Compensation ...	6,215	3,330	...	3,330	...	3,330	...	2,885		
		Acqueduct.										
	C.—Masonry ...	Drainage crossings at chainage 600	1,021	473	...	473	...	473	...	548		
		Do. do. ... 1,900	1,390	28	...	28	...	28	...	1,362		
		Road bridge and regulator at chainage. 1,350	433	429	...	429	...	429	...	4		
		Do. do. 6,120	511	1,511	...	1,511	...	1,511	1,000	...		
		Drainage crossing at chainage. 6,380	1,498	1,616	...	1,616	...	1,616	118	...		
		Do. do. ... 9,112	651	672	...	672	...	672	21	...		
		Road bridge and regulator at chainage. 10,000	571	543	...	543	...	543	...	28		
		Do. do. 12,900	511	478	...	478	...	478	...	33		
		Concrete ...	1,664	3	...	3	...	3	...	1,661		

Brick in lime ...		6,941	12,459	...	12,459	...	12,459	5,518	...	Revised Estimate sanctioned in Secretary of
Arch work ...		741	...	...	...	...	...	...	741	
Bailing out water ...		900	...	...	...	...	...	...	900	
Extra lead for carting bricks ...		539	...	...	...	...	...	...	539	
Sub-heads costing below Rs. 500 ...		1,855	90	...	90	...	90	...	1,765	
Contingencies ...		633	100	...	100	...	100	...	533	
Total ...		19,859	18,402	...	18,402	...	18,402	6,657	8,114	
Drainage Syphon at chainage.	15,100	598	623	...	623	...	623	25	...	
Do. do.	17,000	553	1,594	...	1,594	...	1,594	1,041	...	
Road bridge and regulator ...	18,515	549	45	...	45	...	45	...	504	
Drainage crossings at chainage	19,450	934	1,679	...	1,679	...	1,679	745	...	
Do. do.	21,200	1,259	1,289	...	1,289	...	1,289	30	...	
Road bridge and regulator at chainage.	22,100	547	526	...	526	...	526	...	21	
Concrete ..		627	...	...	...	...	...	...	627	
Brick in lime ...		2,505	5,167	...	5,167	...	5,167	2,662	...	
Sub-heads costing below Rs. 500 ...		1,839	37	...	37	...	37	...	1,802	
Contingencies ..		249	34	...	34	...	34	...	215	
Total ...		9660	10,994	...	10,994	...	10,994	4,503	3,169	
Drainage crossings at chainage..	24,500	609	700	...	700	...	700	91	...	
Do. do. ...	26,800	1,125	1,399	...	1,399	...	1,399	274	...	
Road bridge and regulator at chainage.	27,500	555	1,027	...	1,027	...	1,027	472	...	
Fall and road bridge at chainage	29,800	565	...	...	...	...	...	...	565	
Road bridge at chainage ...	31,700	471	440	...	440	...	440	...	31	
Carried over ..		3,325	3,566	...	3,566	...	3,566	837	596	

RAMTEK RESERVOIR.

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the Sanctioned Estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914. On completed works.	On works in progress.	Total.	Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State. More.	Less.	Authority for sanctioning the estimate.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Brought forward ...	3,325	3,566	...	3,566	...	3,566	837	596		
B.—Nagardhan Distributary.	C.—Masonry.—(*Concld.*)	Fall at chainage ... 33,650	794	722	...	722	...	722	..	72	Despatch No. 7-P. W., dated the 24th February 1911.	
		Fall and road bridge at chainage 34,400	479	524	...	524	...	524	45	...		
		Do. do. 36,700	492	860	...	860	...	860	368	...		
		Road Do. do. 40,400	542	450	...	450	...	450	...	92		
		Fall Do. do. 41,800	257	257	...	257	...	257	...	...		
		Fall and road bridge do. 43,300	286	278	...	278	...	278	...	8		
		Fall at do. 45,700	124	100	...	100	...	100	...	24		
		Road bridge do. 47,150	202	217	...	217	...	217	15	...		
		Stop dam at tail channel ...	81	...	...	...	...	...	...	81		
		Sub-heads below Rs. 500 ...	1,760	845	...	845	...	845	...	915		
		Establishment charges ...	1,518	919	...	919	...	919	...	599		
		Causeway do. 38,400	...	311	...	311	...	311	311	...		
		Fine ...	...	—200	...	—200	...	—200	—200	...		
		Total ...	9,860	8,849	...	8,849	...	8,849	1,376	2,387		
		Total C.—Masonry ...	39,379	38,245	...	38,245	...	38,245	12,536	13,670		

L.—Earthwork ...	Earthwork of channels ...	...	...	...	...	...	...	...	...	Revised Estimate sanctioned in Secretary of State's
	Excavation of earth ...	15,083	24,428	...	24,428	...	24,428	9,345	...	
	Do. in moorum and large boulders.	579	...	...	...	...	...	...	579	
	Do. do. and very large boulders...	1,716	...	...	...	...	...	...	1,716	
	Do. of catch water drains ...	732	507	...	507	...	507	...	225	
	Sub-heads below Rs. 500 ...	1,765	618	...	618	...	618	...	1,147	
	Excavation of earth	3,950	...	...	...	..	...	...	3,950	
	Establishment charges ...	733	1,133	...	1,133	...	1,133	400	...	
	Contingencies	1,228	503	...	503	...	503	...	725	
	Total ...	25,786	27,189	...	27,189	...	27,189	9,745	8,342	
	Service road ...	332	...	...	...	...	...	...	332	
	Singrampur minor	5,174	...	...	...	...	...	...	5,174	
	Minor at chainage 29,800 ...	7,974	...	...	...	...	...	...	7,974	
	Do. 34,800 ...	885	...	...	...	...	...	...	885	
	Sub-heads below Rs. 500 ...	453	...	...	...	...	...	...	453	
	Silt clearance	...	2,225	...	2,225	...	2,225	2,225	...	
	Arrears of wages	...	—2	...	—2	...	—2	—2	...	
	Total ...	14,486	2,223	...	2,223	...	2,223	2,223	14,486	
	Total for L.—Earthwork ...	40,604	29,412	...	29,412	...	29,412	11,968	23,160	
								11,192		

RAMTEK RESERVOIR.

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the sanctioned estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
			...	...	...	...	...	...	...	...		
B.—Nagardhan Distributary.	P.—Maintenance ...	Silt clearing at chainage 3,300 ...	1,175	2,246	...	2,246	...	2,246	1,171	...	despatch No. 7—P.-W., dated the 24th February 1911.	
		Do. do. ...	990	1,193	...	1,193	...	1,193	203	...		
			...	...	...	...	...	...	...	...		
		Repairing, strengthening and lengthening.	678	1,824	...	1,824	...	1,824	1,146	...		
		Sub-heads below Rs. 500 ...	57	36	..	36	...	36	...	21		
		Establishment ...	270	953	...	953	...	953	583	...		
		Contingencies ...	159	78	...	78	...	78	...	81		
		Total for P.—Maintenance ...	3,329	6,330	...	6,330	...	6,330	3,103	102		
									3,001			
		Total of Nagardhan distributary ...	89,527	77,324	...	77,324	...	77,324	27,614	39,817		
									12,203			
C—Indora Distributary.	B.—Land ...	Compensation for land ...	7,141	5,144	...	5,144	...	5,144	...	1,997		
	C.—Masonry ...	Syphon at chainage 5,000	1,400	2,220	...	2,200	...	2,220	800	...		
		Do. do. 3,400	1,600	2,218	...	2,218	...	2,218	618	...		

Road bridge	do.	4.700	970	874	...	874	...	874	...	96	Revised Estimate sanctioned in Secretary of State's
Do.	do.	5,900	1,096	1,155	...	1,155	...	1,155	59	...	
3′ fall	do.	17,200	788	862	...	862	...	862	74	...	
6′ fall	do.	19.000	652	593	...	593	...	593	...	59	
4′ fall and regulator	do.	7,000	1,200	1,422	...	1,422	...	1,422	222	...	
Do. road bridge	do.	8,100	1,200	1,399	...	1,399	...	1,399	199	...	
5′ do. regulator	do.	9,600	1,100	1,395	...	1,395	...	1,395	295	...	
Syphon	do.	11,200	950	961	...	961	...	961	11	...	
Road bridge	do.	13,300	850	710	...	710	..	710	...	140	
6′ fall and road bridge	do.	20,300	725	720	...	720	...	720	...	5	
4′ do. do.	do.	24.500	609	520	...	520	...	520	...	89	
4-25′ fall and regulator	do.	26,600	629	485	...	485	...	485	...	144	
Road bridge and regulator		27,200	550	485	...	485	...	485	...	65	
Syphon at chainage		35,000	550	1,876	...	1,876	...	1,876	1,326	...	
C-1 Tharodi Minor		..	3,680	2,751	...	2,751	...	2,751	...	929	
C-2 Kacharwabi Minor No. I		...	1,000	892	...	892	...	892	...	108	
C-5 Chokala Minor No. I		...	900	660	...	660	...	660	...	240	
C-8 Aroli Khaperkhera Minor		...	1,150	368	...	368	...	368	...	782	
C-10 Khada Mindi	do.	...	1,690	1,735	...	1,735	...	1,735	45	...	
C-11 Rajoli Khaperkhera	do.	...	960	741	...	741	...	741	...	219	
C-15 Kharda Minor No. I		...	718	21	...	21	...	21	...	697	
Sub-heads below Rs. 500		...	10,683	2,645	...	2,645	...	2,645	...	8,038	
Work establishment		...	775	1,454	...	1,454	...	1,454	679	...	
Syphon at chainage 23,750		...	...	558	...	558	...	558	558	...	
Road bridge do. 28,600		..	...	603	...	603	...	603	603	...	
Do. do. 23,800		...	...	214	...	214	...	214	214	...	
Unadjusted item		...	...	...	1,347	1,347	—1,247 12 2	1,347	1,347	...	
Total for C.—Masonry		...	36,425	30,517	1,347	31,864	—1,247 12 2	31,864	7,050	11,611	
									5,908		

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the sanctioned estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914. On completed works.	On works in progress.	Total.	Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State. More.	Less.	Authority for sanctioning the estimate.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
C.—Indora distributary.	L.—Earthwork ...	Earthwork in Channel, Main ..	6,211	10,813	...	10,813	...	10,813	4,602	...		
		Do. do. Minor ...	4,468	7,552	...	7,552	...	7,552	3,084	...		
		Sub-heads below Rs. 500 ..	571	95	...	95	...	95	...	476		
		C-1 Tarodi Minor ...	2,372	1,774	...	1,774	...	1,774	...	598		
		C-2 Kacherwahi Minor No. I ...	772	55	...	55	...	55	...	717		
		C-5 Choukhala do. do. ...	536	60	...	60	...	60	...	476		
		C-7 Aroli Khaperkhera Minor ...	817	200	...	200	...	200	...	617		
		C-10 Kodamendi do. ...	1,573	35	...	35	...	35	...	1,538		
		Sub-heads below Rs. 500 ...	2,160	1,125	...	1,125	...	1,125	...	1,035		
		Work establishment ...	459	167	...	167	...	167	...	292		
		Contingencies ...	585	4	...	4	...	4	...	581		
		Unadjusted item ...	...	...	467	467	—429 1 9	467	467	...		
		Total for L.—Earthwork ...	20,524	21,880	467	22,347	—429 1 9	22,347	8,153	6,330		
									1,356			
	O.—Miscellaneous ...	Miscellaneous charges ...	...	523	...	523	...	523	523	...		
	P.—Maintenance ...	Maintenance do. ...	1,145	3,817	...	3,817	...	3,817	2,672	...		
		Total C.—Indora Distributary ...	65,235	61,881	1,814	63,695	—1,676 13 11	63,695	18,398	19,938	despatch No. 7—P.-W., dated the 24th February 1911.	
									1,540			

D.—Phandara Distributary.	B.—Land ...	Land compensation charges ...	13,023	...	11,250	11,250	916 5 1	11,250	...	1,773	Revised Estimate sanctioned in Secretary of State's
		Dagbailing ...	1,914	1,343	...	1,343	...	1,343	...	571	
		Boundary stones ...	3,678	...	...	...	...	...	...	3,678	
		Contingencies ..	930	...	...	...	..	...	...	930	
		Total B.—Land ...	19,545	1,343	11,250	12,593	916 5 1	12,593	...	6,952	
	C.—Masonry ...	Syphon at chainage 3,900	1,500	1,695	...	1,695	...	1,695	195	...	
		3-2 fall and Road Bridge C. „ 5,300	2,100	2,785	...	2,785	...	2,785	685	...	
		4′ fall ... „ 6,300	1,579	1,539	...	1,539	...	1,539	...	40	
		D-2 minor head .. „ 7,400	565	421	...	421	...	421	...	145	
		4′ fall and regulator... „ 7,500	1,781	1,832	...	1,832	...	1,832	51	...	
		4′ fall ... „ 8,300	1,508	1,652	...	1,652	...	1,652	144	...	
		4′ fall ... „ 9,200	1,259	1,385	...	1,385	...	1,385	126	...	
		Road Bridge and regulator. „ 10,870	1,135	2,436	...	2,436	...	2,436	1,301	...	
		Do. do ... „ 15,300	1,548	1,662	...	1,662	...	1,662	114	...	
		Do. do. ... „ 17,200	1,186	1,442	...	1,442	...	1,442	256	...	
		4′ fall and regulator ... „ 17,800	1,681	1,827	...	1,827	...	1,827	146	...	
		Drainage culvert ... „ 18,828	1,080	1,311	...	1,311	...	1,311	231	...	
		Railway Syphon, Bengal-Nagpur Railway. „ 3,500	3,500	3,865	...	3,865	...	3,865	365	...	
		Drainage culvert ... „ 20,200	1,200	1,535	...	1,535	...	1,535	335	...	
		Road Bridge ... „ 20,400	1,260	1,345	...	1,345	...	1,345	85	...	
		Road Bridge and regulator. „ 26,520	1,451	1,665	...	1,665	...	1,665	214	...	
		Carried over ...	24,334	28,397	...	28,397	...	28,397	4,248	185	

RAMTEK RESERVOIR.

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the sanctioned estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Brought forward ...	24 334	28,397	...	28,397	...	28,397	4,248	185		
D.—Bhandara Distributary.	C.—Masonry ...	Drainage syphon at chainage 26,800	1,426	1,597	...	1,597	...	1,597	171	...		
		Do. ... „ 27,565	813	914	...	914	...	914	101	...		
		Do. ... „ 29,000	1,048	1,430	...	1,430	...	1,430	382	...		
		Railway syphon under Bengal-Nagpur Railway. „ 30,100	2 500	3,198	...	3,198	...	3,198	698	...		
		Road bridge and regulator. ... „ 30,200	1,500	738	...	738	...	738	..	762	despatch No. 7,-P. W, dated the 24th February 1911.	
		Drainage syphon ... „ 30,380	1,395	1,673	...	1,673	...	1,673	278	...		
		Do. ... „ 32,845	1,546	935	...	935	...	935	...	611		
		D-8 Minor head ... „ 34,200	1,008	791	...	791	...	791	...	217		
		Regulator and Road Bridge. „ 34,650	1,411	1,222	...	1,222	...	1,222	...	189		
		4-02′ fall ... „ 35,529	1 043	1,204	...	1,204	...	1,204	161	...		
		3·0′ fall ... „ 36,250	1,007	1,428	...	1,428	...	1,428	421	...		

3′ fall and Road Bridge.	,,	36,582	1,281	1,339	...	1,339	...	1,339	58	...	Revised Estimate sanctioned in Secretary of State's
2′ fall ...	,,	38,206	891	987	...	987	...	987	96	...	
Drainage culvert ...	,,	45,100	1,360	1,340	...	1,340	...	1,340	...	20	
Drainage syphon ...	,,	46,475	1,700	2,151	...	2,151	...	2,151	451	...	
Road Bridge ...	,,	47,972	934	254	...	254	...	254	...	680	
Drainage syphon ...	,,	49,600	846	718	...	718	...	718	...	128	
Do. ...	,,	50,300	1,000	304	...	304	...	304	...	696	
E.—Distributary head	,,	51,133	863	840	...	840	...	840	...	23	
4·03′ fall and regulator.	,,	51,933	952	952	...	952	...	952	...	...	
Road Bridge ...	,,	53,750	728	582	...	582	...	582	...	146	
Pipe syphon ...	,,	54,300	575	6,123	...	6,123	...	6,123	5,548	...	
5·0′ fall ...	,,	55,400	917	819	...	819	...	819	...	98	
Drainage syphon ...	,,	55,950	1,541	1,306	...	1,306	...	1,306	...	235	
3·0′ fall and Road Bridge.	,,	56,000	942	957	...	957	...	957	15	...	
D-12 Minor head ...	,,	59,350	814	252	...	252	...	252	...	562	
4·5′ fall and regulator	,,	59,833	1,106	1,140	...	1,140	...	1,140	34	...	
4′ fall and Road Bridge.	,,	67,000	514	229	...	229	...	229	...	285	
Skew Bridge ...	,,	82,760	600	356	...	356	...	356	...	244	
Do. ...	,,	82,860	543	669	...	669	...	669	126	...	
3′ fall and Skew Bridge.	,,	84,950	610	1,530	...	1,530	...	1,530	920	...	
Skew Bridge ...	,,	85,650	674	623	...	623	...	623	...	51	
Do. ...	,,	85,580	800	543	...	543	...	543	...	257	
Pipe syphon		...	750	857	...	857	...	857	107	...	
Sub-heads below Rs. 500		...	7,610	...	4,207	4,207	...	4,207	...	3,403	
	Total	...	67,582	68,398	4,207	72,605	...	72,605	13,815	8,792	

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the sanctioned estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secetary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Minors.										
D.—Bhandara Distributary.	C.—Masonry.—(*Concld.*)	D-1 Khandala Minor ...	1,500	1,307	...	1,307	...	1,307	...	193		
		D-2 Ashti " ...	3,486	5,527	...	5,527	...	5,527	2,041	...		
		D-3 Seonee " ...	1,500	1,587	...	1,587	...	1,587	87	...		
		D-4 Moregaon " ...	1,200	725	...	725	...	725	...	475		
		D-5 do. " ...	2,000	1,205	...	1,205	...	1,205	...	795		
		D-6 Adassa " ..	1,750	3,616	...	3,616	...	3,616	1,866	...		
		D-7 Takli " ...	2,000	717	...	717	...	717	...	1,283		
		D-8 Hathidoho " ...	15,000	17,719	...	17,719	...	17,719	2,719	...		
		D-10 Satona " ...	800	460	..	460	...	460	...	340		
		D-11 Khairlanji " ...	650	81	...	81	...	81	...	569		
		D-12 Bela " ...	4,500	4,295	...	4,295	...	4,295	...	205		
		D-14 Sirsce " ...	650	456	...	456	...	456	...	194		
		D-16 Khophorla " ...	500	374	...	374	...	374	...	126		
		D-18 Pinglai " ...	1,200	1,008	...	1,008	...	1,008	...	192		
		D-19 Bhandara " ...	2,000	...	3,479	3,479	125 14 11	3,479	1,479	...		

despatch No. 7-P. W., dated the 24th February 1911.

		Sub-heads below Rs. 500 ...	800	4,047	...	4,047	...	4,047	3,247	...	Revised Estimate sanctioned in Secretary of State's
		Work Establishment ...	1,500	2,442	...	2,442	...	2,442	942	...	
		Pipe Syphon at chainage 83,800 ...	...	482	...	482	...	482	482	...	
		Giving bed level on masonry work...	...	30	...	30	...	30	30	...	
		Bhosa Minor Head at chainage 38,000 ..	...	108	...	108	...	108	108	...	
		Fines to Contractor ...	...	—1,376	...	—1,376	...	—1,376	—1,376	...	
		Contingencies ...	...	106	...	106	...	106	106	...	
		Total ..	41,036	44,916	3,479	48,395	125 14 11	48,395	11,731	4,372	
		Total for C.—Masonry .	1,08,618	1,13,314	7,686	1,21,000	125 14 11	1,21,000	25,546	13,164	
									12,382		
L.—Earthwork ...		D-1 Khandala Minor ...	829	1,788	...	1,788	...	1,788	959	...	
		D-2 Ashti " ...	3,055	132	...	132	...	132	...	2,923	
		D-5 Adassa " ...	600	...	...	...	...	...	...	600	
		D-6 Moregaon " No. II ...	1,363	200	...	200	...	200	...	1,163	
		D-7 Takli " ...	545	29	...	29	...	29	...	516	
		D-8 Hathudohi " ...	11,464	458	...	458	...	458	...	11,006	
		D-12 Bela " ...	4,520	879	...	879	...	879	...	3,641	
		D-16 Khorkurla " ...	572	...	...	...	...	...	...	572	
		D-19 Bhandara " .	900	...	7,159	7,159	209 9 9	7,159	6,259	...	
		Sub-heads below Rs. 500 ..	3,225	...	2,864	2,864	...	2,864	...	361	
		Total ...	27,073	3,486	10,023	13,509	209 9 9	13,509	7,218	20,782	
		Earthwork in main channel ...	43,212	54,163	...	54,163	...	54,163	10,951	...	
		Do. minor do. ...	5,017	27,510	...	27,510	...	27,510	22,493	...	
		Very large boulders ...	509	17	...	17	...	17	...	492	
		Carried over ...	75,811	85,176	10,023	95,199	...	95,199	40,662	21,274	

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the sanctioned estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimates sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs,		
		Brought forward ...	75,811	85,176	10,023	95,199	...	95,199	40,662	21,274		
D.—Bhandara Distributary.	L.—Earthworks.—(*Concld.*)	Rolling of earthwork ...	1,432	1,536	...	1,536	...	1,536	104	...	Despatch No. 7-P. W., dated the 24th February 1911.	
		Lead per earthwork ...	639	...	...	...	...	...	...	639		
		Sub-heads below Rs. 500 ...	1,276	1,137	...	1,137	...	1,137	...	139		
		Establishment charges ...	1,833	1,304	...	1,304	...	1,304	...	529		
		Contingencies ...	4,050	109	...	109	...	109	...	3,941		
		Digging of catch-water drain ...	...	404	...	404	...	404	404	...		
		Cutting of rice field bund ...	...	200	...	200	...	200	200	...		
		Making service road ...	...	270	...	270	...	270	270	...		
		Total for L.—Earthwork ...	85,041	90,136	10,023	1,00,159	209 9 9	1,00,159	41,640	26,522		

	O.—Miscellaneous ...	Dagbailing land width ...	...	1,846	...	1,846	...	1,846	1,846	...	Revised Estimate sanctioned in Secretary of State's
		Boundary stones ...	...	449	...	449	...	449	449	...	
		Fixing stones ...	...	30	...	30	...	30	30	...	
		Collection of babul seeds ...	...	3	...	3	...	3	3	...	
		Excavation of catch-water drain ...	...	310	...	310	...	310	310	...	
		Total O.—Miscellaneous ...	...	2,638	...	2,638	...	2,638	2,638	...	
	P.—Maintenance ...	Silt clearance ...	1,250	2,100	...	2,100	...	2,100	850	...	
		Repairing ruts in banks	1,000	5,508	...	5,508	...	5,508	4,508	...	
		Sub-heads below Rs. 500 ...	564	1,793	...	1,793	...	1,793	1,229	...	
		Contingencies ...	141	3	...	3	...	3	...	138	
		Work establishment ...	...	316	...	316	...	316	316	...	
		Total P.—Maintenance ...	2,955	9,720	...	9,720	...	9,720	6,903	138	
									6,765		
		Total D.—Bhandara Distributary ...	2,16,159	2,17,151	28,959	2,46,110	1,251 13 9	2,46,110	76,727	46,776	
E.—Nari Distributary.	B.—Land ...	Compensation for land ...	4,393	1,497	...	1,497	1,128 5 9	1,497	...	2,896	
	C.—Masonry ...	Railway Syphon at chainage 1,581...	3,000	8,184	...	8,184	...	8,184	5,184	...	
		4′ fall and Regulator " 1,800...	555	909	...	909	...	909	354	...	
		Road Bridge " 2,518...	577	682	...	682	...	682	105	...	
		E-1 Nari Panchgaon Minor ...	4,000	2,338	...	2,338	...	2,338	...	1,662	
		E-2 Jamuria " ...	4,000	1,320	...	1,320	...	1,320	...	2,680	
		E-3 Warthi " ...	1,500	1,074	..	1,074	...	1,074	...	426	
		E-6 Bothlee " ...	1,000	16	...	16	...	16	...	984	
		Work Establishment ...	900	475	...	475	...	475	...	425	
		Carried over ...	15,532	14,998	...	14,998	...	14,998	5,643	6,177	

RAMTEK RESERVOIR.

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the sanctioned estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less		
1	2	3	3	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Brought forward ...	15,532	14,998	...	14,998	...	14,998	5,643	6,177		
E.—Nari Distributary.	C.—Masonry ...	Road Bridge at chainage 6,200..	...	498	...	498	...	498	498	...		
		Sub-heads below Rs. 500 ...	4,248	1,619	...	1,619	...	1,619	...	2,629		
		Road Bridge at chainage 11,640 ...	...	207	...	207	...	207	207	...		
		Fall and Regulator ,, 13,500...	...	160	...	160	...	160	160	...		
		Do. do. ,, 17,200...	...	133	...	133	...	133	133	...		
		Do. do. ,, 19,100 .	...	105	...	105	...	105	105	...		
		Total C.—Masonry ...	19,780	17,720	...	17,720	...	17,720	6,746	8,806		
									2,060		despatch No. 7-P. W., dated the 24th February 1911.	
	L.—Earthwork ...	E-1 Neri Puchgaon Minor ...	720	237	...	237	...	237	...	483		
		E-2 Jamunia ,, ...	1,462	...	...	...	...	...	...	1,462		
		Earthwork in main channel ...	5,183	8,123	...	8,123	...	8,123	2,940	...		

		Sub-head costing below Rs. 500 ...	2,134	966	...	966	...	966	...	1,168	Revised Estimate sanctioned in Secretary of State's
		Establishment ...	458	131	...	131	...	131	...	327	
		Contingencies ...	498	30	...	30	...	30	...	468	
		Total L.—Earthwork ...	10,455	9,487	...	9,487	...	9,487	2,940	3,908	
	O.—Miscellaneous ...	Miscellaneous charges ...	...	315	...	315	...	315	315	...	
	P.—Maintenance ...	Maintenance charges ...	814	1,081	...	1,081	...	1,081	267	...	
		Total E.—Neri Distributary ...	35,442	30,100	...	30,100	1,128 5 9	30,100	10,268	15,610	
									5,342		
General Distributaries.	B.—Land ...	Compensation for land ...	1,145	...	...	...	308 11 0	...	...	1,145	
	K.—Buildings ...	Sub-Divisional officer's Bungalow ...	1,022	1,938	...	1,938	..	1,938	916	...	
		Assistant Engineer's Bungalow ...	1,033	2	...	2	...	2	...	1,031	
		Sub-heads below Rs. 500 ...	2,405	...	1,272	1,272	....	1,272	...	1,133	
		Total ...	4,460	1,940	1,272	3,212	....	3,212	916	2,164	
		Quarters along the line at Tharsa ...	1,769	...	227	227	...	227	...	1,542	
		Do do. Khat ...	1,762	2,164	...	2,164	...	2,164	402	..	
		Do. do. Kacharwahi.	673	842	...	842	...	842	169	...	
		Do. do. Dhanla ...	673	922	...	922	...	922	249	...	
		Do. do. Birsi ...	673	...	58	58	...	58	...	615	
		Sub-heads below Rs. 500 ...	1,208	...	988	988	....	988	...	220	
		Inspection Bungalow at Aroli ...	5,000	...	...	...	...	...	...	5,000	
		Do. do. Virsee ...	5,000	...	6,426	6,426	9,700 0 0	6,426	1,426	...	
		Do. do. Dhanla ...	5,000	...	4,630	4,630	...	4,630	...	370	
		Carried over ...	26,218	5,868	13,601	19,469	9,700 0 0	19,469	3,162	9,911	

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the sanctioned estimate.—(Contd.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State.	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Brought forward ..	26,218	5,868	13,601	19,469	9,700 0 0	19,469	3,162	9,911		
General Distributary.	K.—Buildings.—(*Concld.*)	Inspection Bungalow, Khat ...	5,000	...	4,528	4,528	...	4,528	..	472	despatch No. 7-P. W., dated the 24th February 1911.	
		Do. do. Birsi ...	5,000	...	1,000	1,000	...	1,000	...	4,000		
		Do. do. Nagardhan ...	5,000	...	4	4	...	4	...	4,996		
		Inspection Bungalow's furniture ...	12,000	...	14,262	14,262	250 0 0	14,262	2,262	...		
		Do. hut at Tharsa ...	...	5,084	...	5,084	...	5,084	5,084	...		
		Contingencies ...	2,661	...	2,087	2,087	...	2,087	...	574		
		Work Establishment ...	...	...	1,869	1,869	...	1,869	1,869	...		
		Fines on Contractor ...	...	—215	...	—215	...	—215	—215	...		
		Unadjusted items ...	...	331	...	331	...	331	331	..		
		Total for K.—Buildings ...	55,879	11,068	37,351	48,419	9,950 0 0	48,419	12,493	19,953		
	L.—Earthwork ...	Survey Khalasees ...	6,048	6,048	...	6,048	...	6,048	...	...		
		Survey pegs, small ...	1,200	1,200	...	1,200	...	1,200	...	...		
		Dagbailing, centre line ...	2,944	2,944	...	2,944	...	2,944	...	...		

	Bench mark stones ...	900	9,00	...	900	...	900	...	...	Revised Estimate sanctioned in Secretary of State's
	Trial pits for masonry works ...	1,000	1,000	...	1,000	...	1,000	...	...	
	Sub-heads costing Rs. 500 and below ...	1,604	...	339	339	273 13 3	330	...	1,265	
	Contingencies. ...	685	...	116	116	...	116	...	569	
	Work Establishment (not provided in Estimate).	...	...	5,787	5,787	...	5,787	5,787	...	
	Total for L.—Earthwork ..	14,381	12,092	6,242	18,334	273 13 3	18,334	5,787	1,834	
O.—Miscellaneous ...	Miscellaneous charges ...	...	10,229	...	10,229	...	10,229	10,229	...	
P.—Maintenance ..	Maintenance do. ..	2,781	1,512	...	1,512	...	1,512	...	1,269	
	Total General Distributaries ..	74,186	34,901	43,593	78,494	10,532 8 3	78,494	28,509	24,201	
	„ A.—Distributary ...	4,58,135	4,70,085	20,639	4,90,724	1530-13-2	4,90,724	1,58,405	1,25,816	
	„ B.—Nagardhan Distributary ..	89,527	77 324	...	77,324	....	77,324	27,614	39,817	
	„ C.—Indora „ ...	65,235	61,881	1,814	63,695	1676-13-11	63,695	18,398	19,938	
	„ D.—Bhandara „ ...	2,16,159	2,17,151	28,959	2,46,110	1251-13-9	2,46,110	76,727	46,776	
	„ E.—Neri „ ...	35,442	30,100	...	30,100	1128-5-9	30,100	10,258	15,610	
	„ General „ ...	74,186	34,901	43,593	78,494	10532-8-3	78,494	28,509	24,201	
	Unforeseen items ...	20,000	...	...	...	...	...	...	20,000	
	Total Distributaries ...	9,58,684	8,91,442	95,005	9,86,447	12,760 11 0	9,86,447	3,19,921	2,92,158	
	Total Head works ...	12,85,784	10,54,731	1,96,313	12,51,044	8,570 12 9	12,51,044	1,52,040	1,86,780	
	Establishment charges ...	4,57,293	...	4,52,701	4,52,701	....	4,52,701	...	4,592	
	Tools and Plant charges ...	29,823	45,633	..	45,633	...	45 633	15,810	...	
	Total Direct Charges ...	27,31,584	19,91,806	7,44,019	27,35,825	21,337 7 9	27,35,825	4,87,771	4,83,530	
	Less Receipts on capital account ...	— 1,271	...	...	...	...	...	4,241	...	
	Net Direct charges ...	27,30,313	...	...	...	...	27,35,825	...	...	

RAMTEK RESERVOIR.

STATEMENT A.—Comparing the Actual Expenditure by Main and Sub-heads of the Capital Account with the sanctioned estimate.—(Concld.)

Head.	Sub-head.	Name of work.	Provision in estimate sanctioned by the Secretary of State	Expenditure to end of February 1914.			Actual further outlay as shown in Statement B.	Actual outlay.	Difference between total outlay and the amount sanctioned by the Secretary of State.		Authority for sanctioning the estimate.	Remarks.
				On completed works.	On works in progress.	Total.			More.	Less.		
1	2	3	4	5	6	7	8	9	10	11	12	13
			Rs.	Rs.	Rs.	Rs.	Rs. a. p.	Rs.	Rs.	Rs.		
		Indirect Charges.									Revised Estimate sanctioned in Secretary of State's despatch No. 7-P. W, dated the 24th February 1911.	
		Capitalized abatement of Land Revenue.	1,13,525	...	...	...	...	78,364	...	...		
		Leave and Pension allowances ...	64,020	...	...	...	...	63,152*	...	...		
		Total Indirect charges ...	1,77,545	...	...	...	...	1,41,516	...	...		
		GRAND TOTAL DIRECT AND INDIRECT CHARGES.	29,07,858	...	..	...	21,327 7 9	28,77,341	...	...		

*As per Administrative accounts of 1912-13 = 62,648
plus 14 per cent on Rs. 3,609 during 1913-14 = 504
63,152

H. W. HALLIFAX,

Executive Engineer,

Kanhan Irrigation Division.

RAMTEK RESERVOIR.

STATEMENT B.—Schedule of works sanctioned, but not completed.

Serial No.	Classifications. Head.	Classifications. Sub-head.	Division.	Name of work.	Amount of sanctioned estimate.	Outlay to end of February 1914.	Unexpended balance.	Actual outlay after February 1914.	Date of completion.	Remarks.
1	2	3	4	5	6	7	8	9	10	11
					Rs.	Rs.	Rs.	Rs. a. p.		
1	Head Works ...	B.—Land ...	Kanhan Irrigation Division.	Cultivated land required permanently	1,81,000	1,80,720	280	368 6 7	...	
2	" ...	K.—Buildings ...	" ...	Inspection bungalow	9,932	13,882	—3,950	8,169 0 0	...	
	" ...	C.—Masonry ...	" ...	Head Works waste weir	...	...	...	19 6 3	...	
3	" ...	O.—Miscellaneous.	" ..	Work establishment	456	1,711	—1,255	14 0 0	...	
4	A.—Distributary ...	B.—Land ...	" ...	Permanent land	18,108	17,537	571	147 12 10	...	
5	" ...	" ...	" ...	Temporary land	700	394	306		...	
6	Dhanla Distributary.	C.—Masonry ...	" ...	Sub-heads below Rs. 500.	1,877	1,148	729		...	
7	" ...	" ...	" ...	Do.	1,064	721	343		...	
8	" ...	" ...	" ...	Contingencies	477	299	178	408 7 10	...	
9	" ...	" ...	" ...	Nagardhan Minor Head	852	12	840		...	
10	" ...	" ...	" ...	Fall at chainage 117,400	450	203	247		...	
	" ...	B.—Land ..	" ...	Land Charges	...	...	...	974 8 6	...	
11	C.—Indora Distributary.	C.—MASONRY. ...	" ...	Unadjustable items	...	1,347	—1,347	—1,247 12 2	...	
12	" ...	L.—Earthwork ...	" ...	Do.	...	467	—467	—429 1 9	...	
13	Bhandara Distributary.	B.—Land ...	" ...	Land compensation charges	13,023	11,250	1,773	916 5 1	...	
14	" ...	C—Masonry ...	" ...	D·19 Bhandara Minor	2,000	3,479	—1,479	125 14 11	...	
15	" ...	L.—Earthwork ...	" ...	Do.	900	7,159	—6,259	209 9 9	...	
16	" ...	" ...	" ...	Sub-heads below Rs. 500	3,225	2,864	361		...	

RAMTEK RESERVOIR.

STATEMENT B.—Schedule of works sanctioned, but not completed.—(Concld.)

Serial No.	Classifications. Head.	Classifications. Sub-head.	Division.	Name of work.	Amount of sanctioned estimate.	Outlay to end of February 1914.	Unexpended balance.	Actual outlay after February 1914.	Date of completion.	Remarks.
1	2	3	4	5	6	7	8	9	10	11
					Rs.	Rs.	Rs.	Rs. a. p.		
17	General Distributary.	B.—Land ..	Kanhan Irrigation Division.	Compensation for land	1,145	...	1,145	308 11 0	...	
18	" ...	K.—Buildings ..	" ...	Sub-heads below Rs. 500	2,405	1,272	1,133	...	...	
19	" ...	" ...	" ...	Quarters along the line at Birsee	673	58	615	...	...	
20	" ...	" ..	" ..	Sub-heads below Rs. 500	1,208	988	220	...	...	
21	" ...	" ...	" ...	Inspection Bungalow at Virsee	5,000	6,426	—1,426	9,700 0 0	...	
22	" ...	" ...	" ...	Do. do. Dhanla	5,000	4,630	370	...	...	
23	" ..	" ...	" ...	Do. do. Khat	5,000	4,528	472	...	...	
24	" ..	" ...	" ..	Do. do. Nagardhan	5,000	4	4,996	...	...	
25	" ..	" ...	" ...	Do. furniture	12,000	14,262	—2,262	250 0 0	...	
26	" ...	" ...	" ..	Contingencies	2,661	2,087	574	...	...	
27	" ..	" ...	" ...	Work Establishment	...	1,869	—1,869	...	...	
28	" ..	" ...	" ...	Unadjusted items	...	331	—331	...	...	
29	" ..	L.—Earthwork ...	" ...	Sub-heads below Rs. 500	1,604	339	1,265	273 13 3	...	
30	" ..	" ...	" ...	Contingencies	685	116	569	...	...	
31	Bhandara Distributary.	C.—Masonry ...	" ...	Sub-heads below Rs. 500	7,610	4,207	3,403	...	...	
32	General Distributary.	L.—Earthwork ...	" ...	Work establishment	...	5,787	—5,787	...	...	
			" ...	Establishment Charges	4,57,293	4,52,691	4,602	...	...	
	E.—Distributary ...	B.—Land ...	" ..	Land charges	...	...	...	1,128 5 9	...	
				Total ..	7,41,348	7,42,783	—1,440	21,337 7 9	...	

H. W. HALLIFAX,
Executive Engineer,
Kanhan Irrigation Division.

RAMTEK RESERVOIR.

STATEMENT C.—Showing the names of Officers in charge of the work.

Name.	Period of incumbency.	
	From	To
1	2	3
Head Works Sub-Division.		
1. Mr. E. S. L. Beddy, Covenanted Engineer	24th September 1906 A. N.	15th December 1909 A.N.
2. „ J. O. F. Wilcocks, Temporary „	15th December 1906 A. N	5th March 1907 A. N.
3. „ E. S. L. Beddy, Covenanted „	5th March 1907 A. N.	23rd June 1908.
4. „ A. R. Pollard, Assistant „	23rd June 1908 ...	21st January 1909.
5. „ E. S. L. Beddy, Executive „	22nd January 1909 ...	17th September 1909.
6. „ A. R. Pollard, Assistant „	17th September 1909...	19th March 1910.
7. „ C. Q. Henriques „ „	20th March 1910 ...	21st December 1910.
8. „ H. W. Hallifax, Temporary „	21st December 1910 ...	8th December 1911.
9. „ H. J. Goodwin „ „	13rd December 1911...	28th March 1913.
10. „ S. Sen Gupta „ „	11th April 1913 ...	4th August 1913.
11. Babu Khushi Ram, Supervisor	5th August 1913 ...	To date.
Distributary Sub-Division.		
1. Mr. F. W. McCall, Temporary Engineer	4th July 1906 ...	7th December 1906.
2. „ E. S. L. Beddy, Covenanted „	17th December 1906 ...	2nd March 1907.
3. „ F. W. McCall, Temporary „	2nd March 1907 ...	1st May 1910.
4. Babu Raunqui Ram, Ty. Upper Subordinate	2nd May 1910 ...	1st August 1910.
5. Mr. F. W. McCall, Temporary Engineer	2nd August 1910 ...	14th August 1910.
6. Babu Raunqui Ram, Ty. Upper Subordinate	15th August 1910 ...	31st October 1910.
7. „ Salamat Rai, Overseer	31st October 1910 ...	6th January 1911.
Executive Engineers.		Amalgamated to Head Works Sub-division.
1. Capt. H. De L. Pollard Lowsley, R. E., C. I. E.	4th July 1906 ..	21st March 1910.
2. „ A. ff. Garrett, R. E.	21st March 1910 ...	12th July 1911.
3. Mr. H. W. Hallifax, Temporary Engineer	12th July 1911 ...	8th August 1911.
4. Capt. A. ff. Garrett, R. E.	9th August 1911. ...	13th December 1911.
5. Mr. H. W. Hallifax, Temporay Engineer	13th December 1911...	30th May 1912.
6. „ S. N. Bhaduri „ „	30th May 1912 ...	30th November 1912.
7. „ H. W. Hallifax „ „	30th November 1912...	To date of completion.

H. W. HALLIFAX,
Executive Engineer,
Kanhan Irrigation Division.

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